Cape Peninsula
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The role of environmental sustainability in a design-driven fashion industry: A South African case study.

by

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ABSTRACT

This thesis is an investigation into environmental sustainability in the South African fashion industry, with a particular focus on the role of design therein. The fashion and textile industry is a significant contributor to the South African economy and a major user of human and natural resources. It is through the use of resources – natural, constructed and human – that the industry is also supposedly damaging to the natural environment and the people working within it. Notable authors on environmentally sustainable design and, in particular, environmentally sustainable fashion design, seem to suggest that a holistic approach to environmental sustainability is fundamental to the implementation thereof. Design has the ability to direct change, and thus design and designers have the potential to drive holistic sustainable practices in the fashion system.

The question this research therefore poses is what the role of environmental sustainability should be in a design-driven approach in the South African fashion industry; interrogated through an exploratory and descriptive case study. The case study consists of three purposively selected sub-units that operate within an environmentally sustainable focus in their fashion businesses, and that design, produce, and retail fashion products. The aim of the research was to explore, through a snapshot of the South African fashion system, the implementation of environmental sustainability in the fashion industry in South Africa, in order to determine what role fashion design practice can have in developing environmental sustainability in the fashion system.

The most notable finding of the research highlights the immense difficulty of operating as a fashion business from an environmentally sustainable focus in South Africa due to the lack (and unsuitability) of resources that can be considered environmentally sustainable. The declining textile industry of South Africa makes it either almost impossible, or very costly, to work within an environmentally sustainable framework, and is a major impediment in the implementation of environmental sustainability in praxis. Therefore, those businesses that decide to operate within an environmentally sustainable framework do so because of inherent personal values and ethics.

The second aspect identified in the survey of scholarship and underpinned by the findings, is a need for a transformative approach with regard to design praxis and how design praxis can influence consumer eco-consciousness. The research concludes with a recommended framework that suggests a holistic and integrated approach to design-driven environmental sustainability in the South African fashion industry, and elaborates on the role of the fashion designer in the implementation of environmental sustainability in the fashion system. The holistic and integrated approach should extend into fashion design education, requiring a fundamental shift in current fashion design education in South Africa.

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DEDICATION

Dick
Kiny

Sash
Tim

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CHAPTER 1

INTRODUCTION TO THE STUDY

Mainstream consumers are intellectually informed, but not emotionally engaged in the discourse on consumer economy, nor are they translating these messages into lifestyle changes. Perhaps one of the reasons for this malaise is that a focus on halting material consumption not only challenges corporations and the premise on which "Western progress" was founded, but also questions the social and cultural relevance of things to people – the very foundation of meaning and sense of self that people have created through goods.

(Fletcher & Grose, 2012:139)

Fletcher (2007:120) states that the fashion and textile sectors are amongst the most environmentally damaging in relation to use of resources and are dominated by consumption-induced fast changing trends. Woolworths, a retailer in the country, implemented environmentally sustainable practices in part of the clothing produced, which included using a percentage of organic cotton in t-shirts. Recently, they introduced blue denim jeans as an environmentally sustainable clothing product range. For this product, local cotton textiles are used; the textiles are made with recycled polyester thread, manufactured using reduced water and energy processes and the product is free of harmful chemicals. Approximately 12 recycled plastic bottles are used to develop the recycled polyester fibre that a pair of men's denim jeans is made of (Good Business Journey 2008 guideline, 2008:21-38; Woolworths(a), n.d.; Woolworths, 2015).

Cape Union Mart, a leading outdoor product retailer in South Africa, uses recycled plastic for some of their products (Anon, 2008:6). An example of this is the K-Way women's Galaxy Fleece jacket, which consists of 65 percent recycled polyester and 35 percent virgin polyester and is made by a local clothing manufacturer. Although not specified, it seems that this product is similar to the fleece products produced by Patagonia, where recycled soda bottles are predominantly used to develop polyester fibres. Both the processes described above are regarded as sustainable as it requires less oil to recycle plastic waste to produce eco-polyester than to produce virgin polyester (Lee & Sevier, 2008:6).

Chapman and Gant (2007:9) mention that sustainable design is more than just a tick for compliance and requires an in-depth engagement. Sustainability is derived from the word 'to sustain', thereby implying that anything that is deemed sustainable is ongoing, and portrays a sense of stability or 'staying put', whereas in fashion the objective is to constantly move ahead with new ideas and styles (Smal, 2008). The nature of fashion, and thus the fashion system, is a "…complex social system…" (Smal & Lavelle 2011:192). Fashion is at the heart of our culture and refers to identity and aesthetic desires, where fashion consumers addictively shop to align themselves with current trends in fashion. Fletcher (2008:118) argues that these fashion cycles are supported by "…an apparent insatiability of consumers' wants…", and that consumers, because of their inexhaustible supply of desires and needs, buy new items because a new product provides the purchaser with a seemingly novel experience. Thus the constant changes and trend cycles add to the debate on environmental sustainability. She (Fletcher, 2008:xii) further states that:

> ...the challenge of sustainability – that is, of integrating human well-being and natural integrity – is such that we can't go on as before. Business as usual or, more to the point, fashion as usual, is not an option. So what should we do instead?

Chapter 1 introduces and conceptualises the research. This is achieved by contextualising the research topic, Outlining the key constructs that inform this research study, defining the main concepts of the research, providing the research questions, aims and objectives of the research, describing the delineations of the research, contributions made by the research and by providing the structure of the research.

1.1 CONTEXTUALISING THE RESEARCH

In this sub-section the research is introduced by discussing three specific aspects in order to contextualise the research. The three areas include challenges of the South African fashion industry today, current impressions of environmental sustainability in the fashion industry, and the section concludes with a discussion of design.

1.1.1 The South African fashion industry today – changes and challenges

In this sub-section, background information pertaining to the South African fashion industry is provided in order to understand the importance of environmental sustainability in the fashion industry. In 2013, the textile and clothing sector in South Africa represented approximately fourteen percent of manufacturing employment, and is considered one of South Africa's largest sources of tax revenue. Although the industry contributes eight percent to South Africa's gross domestic product (GDP), the industry has, in the past years, lost approximately fifty percent of jobs in this sector alone (South Africa's economy: key sectors, n.d; The South African clothing and textile industry - an overview, 2014). According to a report on the key economic sectors of the country, even though the South African clothing and textile industry is small, it is well placed to be considered a preferred international supplier and should contribute significantly to job creation (South Africa's economy: key sectors, n.d). Local textile mills are currently predominantly producing synthetic fibres; however, the textile industry also produces natural fibres, in order to manufacture woven and knitted textiles. Textile manufacturing is expected to increase with the re-signing of the United States African Growth and Opportunity Act (AGOA) 2015, with textile manufacturers expected to benefit the most (South Africa's economy: key sectors, n.d).

The textile and fashion industry in South Africa remains vulnerable to cheaper imports, predominantly from Asian countries. The South African government's rescue plan, outlined in 2009, set out to assist the industry in recovering some extensive job losses experienced after 2002 (South Africa's economy: key sectors, n.d; Steyn, 2014). According to a news article in a local newspaper, *Mail and Guardian*, Steyn (2014) suggests that South African clothing

manufacturers were to benefit from retailers' growing demands for locally produced goods. She argues that currently, only approximately thirty percent of locally sold clothing products are manufactured locally, and that a focus of local manufacturing would also allow retail to have the latest trends available far more quickly than making use of an off-shore manufacturer. This allows for point-of-sale trends, thus higher stock turn-over and higher profit for the retailer; a term referred to as 'quick response'.[1]

Steyn (2014), reports that Michael Lawrence, executive director of the National Clothing Retail Federation of South Africa, considers South Africa amongst the countries that have the highest import duties on fabrics and clothing in the world. Despite labour cost increases in the East, which provided an opportunity for increase in local production, the textile industry in South Africa has continued to shrink. One of the biggest challenges facing the South African industry remains high input costs, which results in South African suppliers being unable to supply cost competitive and comparable textiles (Steyn, 2014). To assist the fashion and textile industry of South Africa, the Department of Trade and Industry (DTI), developed an initiative, namely, the Clothing and Textile Competitive Programme (CTCP), to enable the sector to improve global competitiveness (The South African clothing and textile industry - an overview, 2014). On the 23rd of June 2014, the DTI, approved a R200-million grant for the development of a cluster in order to "…[kick-start] the local industry's competitiveness capability in global sustainable textile and apparel manufacturing" (South Africa. Department of Trade and Industry, 2014). Part of this initiative is to establish and manage shared resources, develop and grow sustainable products, develop local raw materials and establish a National Sector Body that represents the entire industry value chain.

The Southern African Sustainable Textile and Apparel Cluster (SASTAC) – the sector body referred to above – commissioned a report in 2014 on issues facing the South African textile and clothing industry. The findings of the investigation identified five major challenges facing the industry.[2] The first challenge, finances, concludes that the industry is inward-focussed and primarily pays attention to short term financial pressures, with a resulting decline in competitiveness (SASTAC Material issues report case study, 2014:6). The second issue, human capital, highlights the stressed labour-intensive environment in which the industry functions (SASTAC Material issues report case study, 2014:10). Incoherent and constantly changing legislation, and unethical behaviour are presented as the third and fourth issues, these are issues that impede planning and investment by the industry (SASTAC Material issues report case study, 2014:14;16).

[1] Several leading large retailers in South Africa are adopting a quick response approach in their retailing strategies (Steyn, 2014).

[2] The material issues report is apparently one of several commissioned by SASTAC to be conducted.

The fifth presented issue aligns to environmental concerns in the industry, but this appears not to be considered a focus or primary concern by the participants in the survey. Aspects that were reviewed for the survey consisted of the following: energy efficiency, water use and water pollution, chemical use and chemical management, and waste management. The overall outcome noted for the fifth issue presented was the absence of a need for the understanding and implementation of key aspects relating to environmental sustainability in the industry (SASTAC Material issues report case study, 2014:20). This last identified issue directly relates to the importance of understanding what environmental sustainability entails and how it can be meaningfully implemented by the industry, to provide growth in an ailing manufacturing sector in South Africa. An understanding of what changes and challenges have shaped the South African fashion industry provides background information to current impressions and the importance for environmental sustainability in the fashion industry today.

1.1.2 Current impressions of environmental sustainability in the fashion industry

The aspect presented in this sub-section, namely the current impressions of environmental sustainability in the fashion industry, is situated to provide a brief introduction to environmental sustainability in the fashion industry. The whole fashion system needs to consider a holistic view on environmental sustainability and the opportunities therein. Environmental sustainability is in distinct contrast to industrial production. Industrial high volume production operates in a linear manner of "…take, make, waste…" (Fletcher & Grose, 2012:65). Producing from an environmentally sustainable approach suggests not only a change of process, but an entirely different manner of thinking. The result is a system that engages in a reciprocal closed loop view towards environmental sustainability in the industry (Fletcher & Grose, 2012:11;65;89).

Palomo-Lovinski and Hahn (2014:88) argue that the fashion industry's inability to address environmental sustainability in the industry is partly due to designers not being enabled to do so. The fashion industry has, by responding to and encouraging consumerism, helped develop a society that demands a wide range of products with little knowledge of or regard for environmentally sustainable practices. Mass-market practices perpetuate excessive waste by producing high volumes of clothing that are quickly discarded, thereby encouraging a cycle of waste. These discarded products end in landfills or enter the third world markets as second-hand clothing, to eventually fill up their own third world landfills (Palomo-Lonvinski & Hahn, 2014:89). The authors argue that it is essential that the entire fashion system, which includes producers and consumers of fashion products, see sustainable practices from production and consumption to disposal, as being of extreme importance; one that should be driven by designers in the fashion system (Palomo-Lonvinski & Hahn, 2014:90).

However, the debate about how environmental sustainability in the fashion industry is achievable, and furthermore whose responsibility it should be, is contested. Palomo-Lovinski and Hahn's (2014) article highlights the misunderstandings around the implementation of environmental sustainability from the fashion designer and the perceived understanding by the fashion consumer. In fact, their research highlights that designers do not have a clear opinion concerning to whom environmentally sustainable practices should be directed, or to which market segment sustainable design should be aimed (Palomo-Lovinski & Hahn, 2014:97). Yet, as Fletcher (2008) argues, for environmental sustainability to succeed it should be central to the design process. An understanding of what environmental sustainability in the fashion industry means provides background information by which to understand the importance of design.

1.1.3 A matter of design

In this sub-section, background information on design is provided by briefly reviewing two notable works, namely *The semantic turn* by Krippendorf (2006) and *The design way: intentional change in an unpredictable way* by Nelson and Stolterman (2012), in order to contextualise design as a broader discipline. Krippendorff (2006:13-14) argues that design is integral in a post-industrial era with a human-centred focus. Designers are motivated by challenges (troublesome conditions, problems or conflicts), opportunities to change something for the better, or the possibilities to introduce variations that others have not yet considered. In addition designers consider possible futures (the imagined), evaluate the desirability of these futures, and then create realistic paths to bring the desired futures to fruition (Krippendorff, 2006:28-29). Thus, whereas scientific research generally interrogates the past for recognisable patterns, the method of inquiry for design is "…searching the present for available paths to desirable futures…" (Krippendorff, 2006:29). Krippendorff (2006, 34-35), [3] argues that the science of design – a systematic account of design practice, design methods and design decisions – thus encourages designers to examine their own practices and to disseminate proven design methods.

According to Nelson and Stolterman (2012) design is a third way or culture (with science and arts being the other two) with its own approach to learning and inquiry and design therefore becomes a different way of approaching and being in the world. Design is "…the ability to imagine that-which-does-not-yet-exist…", and thus touches nearly every aspect of our world (Nelson & Stolterman, 2012:12; Smal, 2014:399-406). Things that are important and that are

[3] Krippendorf here refers to Cross's (2000:96) two categories of design and science, the *science of design* in which design is the object of the research; and *design science* in which design (a systematic and rational approach to design) is the scientific activity itself.

highly valued either come from nature or are designed (Nelson & Stolterman, 2012:12). Design, unlike science and art, does not have a well-developed scholarly history (Nelson & Stolterman, 2012:12-14). Scientific enquiry is based on things that are true and is achieved by an inductive or deductive approach, whereas design is the attempt to reach the ultimate particular though making design judgements (Nelson & Stolterman, 2012:30-32). The authors posit that what is desirable or needed is based on design-will and design-intention and that these are the "…means for initiating and directing change based on human agency" (Nelson & Stolterman, 2012:32).

In summary, the envisaged development in the textile and fashion industry in South Africa presents a positive scenario for the expansion of the industry, which represents fourteen percent of the manufacturing sector in South Africa. Although the textile industry, as in other textile industries in the world, has suffered due to lower priced imports from the east, there seems to be possible growth for locally produced textile and fashion products. Notable authors in the discussion of environmental sustainability in fashion emphasise the need for a holistic view in order to see opportunities in environmental sustainability in fashion. To achieve this, the entire fashion system, of which design is a pivotal component, needs to ascribe to environmental sustainability as an approach to development. The lack of urgency in implementing environmental sustainability in the South African textile and fashion industry, highlighted in the SASTAC report, is a cause for concern. Design inquiry could aid desirable future scenarios and design has the ability to direct change (Krippebdorf, 2006; Nelson & Stolterman, 2012).

In this section, a conceptualisation of the research was presented by considering the three areas pertinent to the research, namely, environmental sustainability in the fashion industry, the changes and challenges facing the South African fashion industry and, design. The next section will introduce and discuss the main concepts pertinent to the research.

1.2 KEY CONSTRUCTS IN THE LITERATURE

In this section, key constructs pertinent to this research study are presented, namely, environmental sustainability in relation to global importance; environmental sustainability and design praxis; and, environmental sustainability in the discipline of fashion design. These constructs are discussed in order to support the need and scope for the research.

1.2.1 Environmental sustainability: A global imperative

The first construct, namely environmental sustainability as global imperative, is discussed to consider the role of environmentally sustainable design in business. Esty and Winston (2009:2-20) argue that consideration for the environment should not be viewed as a fringe issue or a digression from real issues, but should be the point of departure and an essential element of business strategy for all business ventures in a contemporary world. Companies that do not use environmental sustainability as a strategy could miss opportunities in markets that are shaped by concerns regarding environmental sustainability. According to Esty and Winston (2009:21) companies that seek environmentally sustainable advantages are companies in which the following five aspects are observed. The first aspect is that they design innovative products and are known for their design innovation, and secondly, place emphasis on environmental stewardship with their suppliers. The third aspect concerns the collection of data to track progress and determine performance, which results in the fourth aspect, namely that these companies seek solutions to processes that could harm environmental practices. The fifth aspect suggests that these are companies which build an eco-advantage culture within their business structures by providing tools, structure and training to empower all employees to aspire to the company's eco-vision.

In the global fashion industry the application of the above-mentioned is especially necessary, as narrated in *Travels of a t-shirt in the global economy* (Rivoli, 2009:xii-xiii).[4] The author describes how cotton grown in Texas, United States of America (a country on a western continent) finds its way to Shanghai, China (a country on an eastern continent) to be developed into fabric and then returns to Miami, Florida, as a product. The above is an example of globalisation in the fashion industry, where the design of a fashion product, the mills that supply the fabric, and the manufacturing of the product and its distribution, may be based in any part of the world (Diamond & Diamond, 2006:16;142). In this research, engaging with design-driven environmental sustainability in fashion design should consider the complexity of doing business from a strategy of environmental sustainability within a global context, requires innovative business, as suggested by Esty and Winston (2009).[5] Environmental sustainability within a context of fashion design praxis needs to be informed by broader environmentally sustainable design praxis.

[4] Rivoli is a professor in business and social issues at Georgetown University, Washington DC, United States of America (Rivoli, 2009).

[5] Sustainable design in relation to business is discussed in Chapter 3.

1.2.2 Sustainability in design praxis

The second construct presented, namely sustainability in design praxis, is discussed to contextualise environmental sustainability in design. According to Thakara (2006:7-17), sustainability is definitely a design issue, and that 80 percent of any product or system's impact on the environment is determined at the design stage. He further advises that the entire pipeline of product development needs to be considered, emphasising the need for an integrated approach when considering environment and sustainability in design. He also suggests that design actions can have significant effects. The designer therefore needs to be sensitive towards the possible consequences of the outcome of the design process, underpinning the importance of the role of design. Design for sustainable environmental practices does not necessarily evoke newness or novelty but deals with activity and the re-organisation of design processes, as well as the outcomes of the design process (Thakara, 2006).

The works of two authors, namely, Ehrenfeld (2008) and Fuad-Luke (2009), are presented in an attempt to contextualise environmental sustainability and design praxis. Both authors consider sustainability from a broader point of view, of which the environment is a component. Ehrenfeld (2008:73) defines design as:

> …a process in which new action-producing structures are created and substituted for old ones such that routine acts change from the old, ineffective patterns to new ones that produce the desired outcomes.

Defining design as action, Ehrenfeld (2008) considers design a process that could influence learning and the changing of one's behaviour. He further places design as the driver in the process to change current systemic presuppositions, such as believing, thinking or doing, in order to achieve the desired eco-result (Ehrenfeld, 2008:74). A suggested definition for sustainability is: a possibility that humans, in coherence with nature, flourish on the earth forever, where 'flourishing' with the notion of 'being' is presented, in opposition to the modernist view of 'having'. Sustainable development is "...fundamentally a tool that suggests new means but still old ends..." (Ehrenfeld, 2008:6). He further states that currently most attempts to develop sustainability merely encourage or reduce un-sustainability, yet do not encourage flourishing. Therefore flourishing, as argued by Ehrenfeld (2008:7), considers more than remaining merely healthy, and finding constant 'quick fixes'. Ehrenfeld (2008:58-59) further explains sustainability by a three-pronged model, that incorporates the natural (our place in nature), the ethical (doing the right thing) and the human (as human beings) elements. He argues that sustainability can only be achieved if all three domains are addressed simultaneously.

The second author, Fuad-Luke (2009:1) argues that design cannot be defined with a brief description, and explains that design is tied to cultural perceptions and is perceived as contemporary, personal and everywhere. Fuad-Luke (2009:20-24) suggests that design, although specific to a discipline, operates within certain frameworks (such as sustainability) that are applicable to any design discipline. He specifically refers to sustainability as the meta-challenge, and thus sustainability is grounded in ecological praxis and systems thinking. This approach challenges the capitalist thinking of production and consumption that assumes unlimited growth. According to Fuad-Luke (2009:23) the concept of sustainability has many definitions that are fairly flexible, depending on the field of study and the context in which the definition is used. Typical characteristics of design refer to the triple bottom line (TBL) of balancing profit (economic issues), people (social issues) and planet (environmental issues).

Both Ehrenfeld (2008) and Fuad-Luke (2009) emphasise the importance of taking cognisance of sustainability from a broader, holistic view, and place emphasis on social issues as well as environmental issues.[6] In this research, although the focus is on environmental sustainability in fashion design, a broad holistic view needs to form the basis for the inquiry.

1.2.3 Environmental sustainability in fashion design praxis

This construct, namely environmental sustainability in fashion design praxis, briefly contextualises approaches to the development and implementation of environmental sustainability in fashion design praxis. Welters (2008:7-29) mentions that sustainability in fashion *per se* is not a new concept. It made its appearance in 1960 during the hippie culture, which specifically rejected mainstream styles. She describes the development of sustainable fashion as coming from an age of consumption during the 1970s, the age of conservation in the 1980s and the age of environmentalism of the 1990s. Welters (2008) refers to the last four decades of the twenty-first century as the age of over-abundance, or 'fast fashion', or, as Brown (2006) suggests, the 'throw-away economy', where little emphasis is placed on producing fashion that lasts beyond a season.

In order to contextualise environmental sustainability in fashion design praxis, a brief introduction to the process of fashion design is needed.[7] The fashion design process may, depending on the size of the enterprise, be done by either a designer or a design team, and is informed by several aspects (Waddell, 2004:40; Greenberg Ellinwood, 2011:1-2; Bye, 2010:x-xi). Fashion design is the visual solution that integrates materials and functionality of the designed product, or a designed product in which aesthetic application is favoured over

[6] Sustainable design, in relation to the environmental and broader social issues, is discussed in Chapter 3.
[7] The fashion design process is further reviewed in Chapter 4.

functionality. Bye (2010:x) maintains that the fashion design process is more than merely aesthetics; it concerns the functionality of the garment, the emotional effect of the garment on the intended consumer, the understanding of the materials the garment consists of, and the manufacturing processes entailed in producing the garments. The design process, specifically in the development of volume clothing, edits and refines designed collections to suit the needs of the market it services (Greenberg Ellinwood, 2011:2-14). In such a system, the question of how feasible environmentally sustainable fashion design is, should be deliberated.

Breds, Hjört and Krüger (2002:27), in earlier discussions on environmental sustainability in fashion, mention that many role players, which include designers and retailers, believe that environmental sustainability and fashion are contradictory to each other in the discourse on eco-fashion. In a consumption-based culture of fast-moving fashion, constant new trends and products produced off-shore, consideration for environmental sustainability is questioned. Black (2011:15-19) refers to this as the 'fashion paradox', where the throw-away culture referred to by Brown (2006), perpetuates consumption and the faster and cheaper production of garments. Black (2011:14) mentions:

> More importantly, fast fashion also puts pressure on the clothing manufacturers and their suppliers to squeeze more output in less time, impacting those at the bottom end of the production chain who actually make the clothes.

Black (2011:17) argues that current business approaches in a global environmentally sustainable fashion industry have to be based on careful and considerate use of resources, economic feasibility and fair trade and labour practices, thus combining "…ecological and ethical principles with concept innovation and a high level of design aesthetics".

In the years since the eco-fashion movement of the 1990s, several environmentally sustainable approaches for implementation of environmental sustainability have emerged. Three examples are provided which each reflect on a different approach to implementing environmental sustainability in fashion design praxis. The first example, A-piece-of-cloth (APOC), is the style approach that Issy Miyake and Dai Fujiwara developed in the late 1990s, in which the designers endeavoured to use the entire length and width of a piece of knitted fabric for several garments in a wardrobe, in an attempt to reduce waste fabrics. The second example is the fleece garment produced by Patagonia and Cape Union Mart (mentioned in the introduction to this chapter), where a percentage of recycled polyester is used in the development of their fleece jackets (Black, 2011:52; Hethorn & Ulasewicz, 2008).

The Patagonia model is interesting as the company made a conscious decision to move to developing eco-fashion. The company is mostly known for the recycling of soda bottles to develop fibres for their fleece product range. This is also referred to as the 'take-back concept' (Locker, 2008:122). Owner and founder of Patagonia, a United States of America-based manufacturer of recycled soda bottle fleece jackets, Yvon Chouinard (as quoted by Hethorn,

2008:x), maintains that this approach is feasible and awards the company "…the opportunity to change the way business can be done, to reduce environmental harm…". The Patagonia model is a good example where the cradle-to-cradle principle is successfully applied (McDonough & Braungart, 2002).[8] The third example is from Nike, who developed an athletic shoe from recycled materials that forms part of their NikeGO Places programme for increased physical activity in children of low-income communities (Loker, 2008:122).

Several authors (Lee & Sevier, 2008; Hethorn & Ulasewicz, 2008; Fletcher, 2008) emphasise that eco-fashion can be misinterpreted by the consumer. In addition, Breds *et al.*, (2002:27) argue that changing the attitudes of the consumer largely depends on the designer and retailer of environmentally sustainable fashion. Many consumers associate 'eco' with 'organic', yet environmental consideration can be achieved by many other methods not entirely understood by the consumer. The consumer's active role should be to specific lifestyle choices which could include use and laundering, re-use, and disposal of fashion products. Thus, to apply environmental sustainability in fashion design requires the implementation of eco- and social agendas in the business of fashion, extensive knowledge of components of the products, and the implementation of manufacturing processes, such as suggested by the National Cleaner Production Centre (NCPC), that adhere to sound environmental and social practices.[9]

Chouniard (as quoted by Hethorn & Ulasewich, 2008:xi), suggests the following:

> To be sustainable means that you take out of the system the same amount of energy as you put in, with no pollution or waste. A sustainable process is one you can do forever without exhausting resources or fouling the environment, which is scary. There has never yet been, not is there now, a sustainable business or sustainable fashion on this planet. […]. We all need to do everything we possibly can do to reduce the harm we do to the environment in our work lives as well as in our personal lives. It's even more important at work because the decisions we make play out on an industrial scale.

In summary, environmental sustainability could provide economic advantage but it requires a holistic approach that considers people, processes and the environment, the meta-challenge as suggested by Fuad-Luke (2009). Business approaches in a global environmentally sustainable fashion industry have to be based on careful and considerate use of resources. Environmental sustainability in fashion design can only be implemented by people

[8] The 'cradle-to-cradle' concept is a product cycle that can also be described as a developed clothing product. At the end of a product's life cycle the product is re-used to develop another, not always the same type of product – the fleece top is therefore a good example. As indicated, this is referred to as a 'take-back programme' (Smal, 2007). The cradle-to-cradle design thinking strategy was brought to the fore by McDonough and Braungart (2002) in their book *Cradle to cradle, remaking the way we make things.* The opposite of cradle-to-cradle is cradle-to-grave, where the entire product is disposed of on the landfill with no further use.

[9] The NCPC of the CSIR has developed two guides to assist mills and manufacturers in implementing cleaner manufacturing processes. Cleaner production is also referred to as processes to minimize waste, prevent pollution and operate in an eco-efficient manner (Barclay, 2004; Barclay, 2008).

knowledgeable in the design and manufacturing field, and design development, which, as suggested by Hethorn and Ulasewicz (2008), starts with an integrated approach. What is interesting to note is that in all of the above conversations, design, sustainability, the integral, and the holistic, are concepts that re-occur, and are centred on the self (social), the global (economic) and the nature (environment). In all the above authors' work, the spiral or three-pronged notion re-occurs, where the focus lies on resources (people, nature), what we do (praxis) and economic viability (profit), as presented in Figure 1.2.

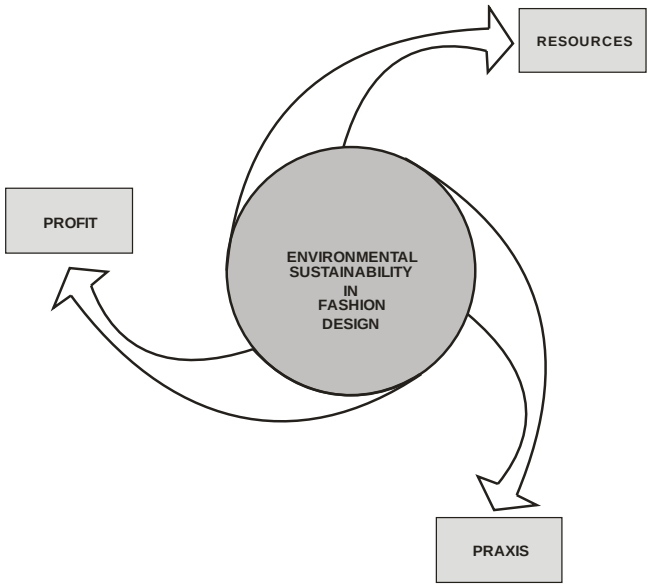


Figure 1.1: Areas of importance for environmental sustainability
(developed by author)

Fuad-Luke (2009); Thakara (2006), Ehrenfeld (2008), Hethorn and Ulasewicz (2008) have developed similar frameworks for sustainability in design, combining three elements that interconnect: people, processes and the environment. As defined, environmentally sustainable fashion design for South Africa needs to consist of design strategies that enable efficient use of resources, develop environmental and social awareness and are economically viable within the South African fashion industry. Where other studies with regard to environmental sustainability in the fashion industry have been approached from a technical textile technology or manufacturing engineering viewpoint, this research is approached from a fashion design as praxis point of view. This section provided an overview of scholarly debates pertinent to the focus and scope of this research, the next section will elaborate and define the main concepts informing this research study.

1.3 MAIN CONCEPTS INFORMING THE RESEARCH

In this section, the main concepts that are pertinent to the research are presented in order to formulate a clearer understanding of the key areas of the research. These main concepts are presented in three sub-sections, namely, design, sustainable design, and several aspects related to fashion design.

1.3.1 Design

In this sub-section, design (in a broader context) is defined, in order to provide a platform from which to understand sustainable design, and, in turn, environmentally sustainable design. The concept 'design' can have multiple meanings and therefore it is necessary to define design for use in this thesis. To achieve this, the work of four authors, namely, Buchanan & Margolin (1995), Highmore (2009) and Walker (2009), is reviewed, all of whom argue that design can be understood in several different ways. The word 'design' originates from the word *disegno*, (the art/practice of drawing) and, because it originated in the Rennaissance period, was association with art and craft. Although design might have originated as a form of art, Walker (2009) suggests that design became a distinct discipline within its own right as a result of the transition from a feudal to a capitalist system of production and the growth of industry, technology and mass production (Walker, 2009; Smal & Lavelle, 2011; Smal, 2012; Smal, 2014). The result was that design became a professional activity. The concept 'design' should thus include the emergence of the designer and designed products or goods (Walker, 2009:42-48).

Design, as a professional activity, is based in an analytical approach to method, where the outcome is either product or process, as suggested in the seminal work of Buchanan and Margolin (1995:xvii). Yet, design can have more than one meaning. It includes the *act of designing*, which is therefore a process and the result of this process materialises in the form of an example (model) or a final product; or, an overall pattern visible in the product – as in the design of a building (Highmore, 2009:4; Walker, 2009:42). Design can thus shift between these multiple forms, from final product to plan, negotiating or orchestrating an alternate approach to doing or living (Highmore, 2009; Smal, 2014). Design is therefore regarded as a distinct discipline with its own area of research which has the intention to develop a body of knowledge and to present opportunities to respond to current social, economic and technological requirements (Walker, 2009; Smal & Lavelle, 2011; Smal, 2012).

The definition of design used in this research that ultimately informs environmentally sustainable praxis in fashion design, will engage with 'activity' (process), 'end result' (product),

and ‘approach’ (alternate view). The following sub-section builds on this working definition of design to provide a definition for environmentally sustainable design for this research.

1.3.2 Environmentally sustainable design

In this sub-section, environmentally sustainable design is defined in order to provide a platform from which to define environmentally sustainable fashion design. When attempting to define environmental sustainability in design, consideration should be given to concepts such as ‘sustainable’ and ‘sustainability’. *The Oxford dictionary* (2005:1492) defines ‘sustainable’ as involving the use of resources in such a way as to not harm the environment, and thus maintaining practices over a time period. Sustainability, as suggested by Ehrenfeld (2008:xiv;50-53), foregrounds flourishing and not merely surviving. ‘Flourishing’, used as a metaphor, suggests that an individual could create his/her own image of what a flourishing world could consist of.

Three authors inform the definition for environmentally sustainable design, namely Fuad-Luke (2009), Ehrenfeld (2008) and McDermott (2007:217-219). The meta-challenge, as suggested by Fuad-Luke (2009:20,82), is *environmental* sustainability, and includes aspects such as the changing of climate patterns, depletion of natural resources, the diminishing ecological capacity, and increasing consumption patterns. Defining environmental sustainability cannot be isolated from the Bruntland Commission (European Commission, 2002:21-25), which states that the global objective is, or should be, meeting the needs of the present without compromising the needs of future generations, and this, by implication, includes ethical practices. McDermott (2007) suggests that a holistic approach that considers the impact on nature and social aspects is imperative in any definition on environmental sustainability in design.

Two related concepts are highlighted by McDermott (2007) that are often used interchangeably with environmentally sustainable design. These concepts, namely ‘green design’ and ‘eco-design’, are often considered ‘buzz words’, and thus detract from the seriousness of environmentally sustainable design. According to McDermott (2007), green design refers to an idealism that stems from a broad holistic approach, whereas eco-design is considered a strategy that includes use of resources and the impact of these on the lifecycle of the product (McDermott, 2007:95-97;124-127). According to McDermott (2007), environmentally sustainable design is the broader focus in which green design can be considered an *idealism* which drives the focus, and eco-design the *strategy* for implementation. In this research the notion of ‘environmental sustainability’ is defined as presented in Figure 1.1.

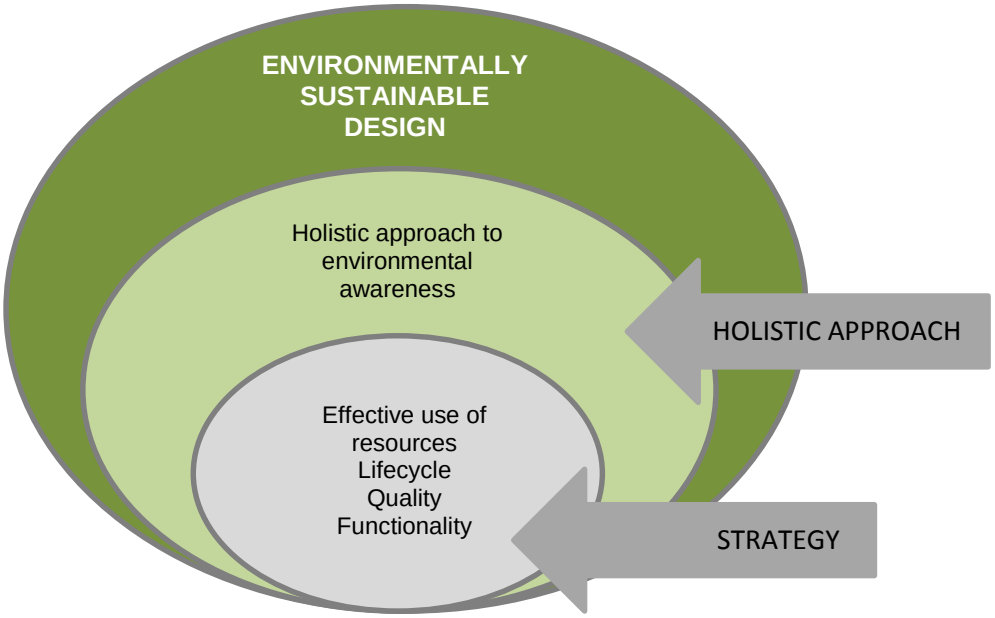


Figure 1.2: Environmentally sustainable design
(developed by the author)

For this research environmentally sustainable design denotes that the research is based on a holistic approach towards environmentally sustainable design as the theoretical base. This viewpoint suggests that environmentally sustainable design should be considered from a comprehensive and inclusive point of view that contains environmentally sustainable design strategies which consider best design practice, product lifecycle and environmental impact, and ethical design practices. The following sub-section focuses the definition of environmentally sustainable design on that of environmental sustainability in fashion design.

1.3.3 Fashion

In this sub-section, fashion is defined, in order to provide an extensive platform from which to define fashion design and ultimately environmentally sustainable fashion design. The concept of fashion is complex and a definition for fashion design has to be based on associated terminologies, namely 'fashion and clothing', 'fashion and trends', the 'fashion industry' and 'environmentally sustainable fashion'. The sub-section concludes with a definition for design-driven environmentally sustainable fashion design applied in this research.

1.3.3.1 Fashion and clothing

According to Barnard (1996:7), the word fashion is derived from the Latin word factio/facere which means to make or do, and is the root of the word fetish. The *Oxford dictionary* (2005:534) defines fashion as a current popular style or trend of a selected lifestyle. Fashion therefore is not only associated with products that are worn, it also refers to jewellery, food, furniture, or

style. It is generally accepted that fashion, with regard to clothing products, is a collective noun describing a style that has been accepted by a wide audience (Kawamura, 2005; Brannon 2005:398; Diamond & Diamond 2006:9; Dias 2008:31; Smal, 2012). The word 'fashion' and its association to clothing is generally accepted, and the concept of 'clothing' is, on occasion, also used as a collective noun for describing garments. To understand the relationship between the two concepts, namely fashion and clothing, the view of three particular authors in fashion is discussed.

The first view is from Kawamura (2005:1), who argues that fashion, an immaterial object, is not merely about clothing and dress, which are material objects, but is also a belief system that is manifest through clothing. Fashion is not created by the individual but by everyone involved in its production. A particular style only becomes 'in fashion' once accepted by a large proportion of people in society (Kawamura 2005:1). Kawamura (2005:1-2) advances her argument by saying that the material object needs to be recognizable as fashion before it reaches the consumption stage, as the consumer *wears* clothing but is in fact *consuming* fashion. This belief, namely that fashion means much more than clothing, is a socially constructed idea (Kawamura 2005:2).

The second view is from Loschek (2009), who argues that fashion is a binding character of social validity, negotiated within society. Adding to the above, the need to wear a particular style is an individual decision.[10] Clothing is developed by means of a design process and become products, which are accepted and become fashion. A semiotic definition of fashion is to acknowledge that "…fashion gives clothing social purpose, above and beyond those of function and aesthetics" (Loschek, 2009:134). Clothing is presented to the consumer by a form of 'performance', such as fashion shows or fashion photography, thereby making fashion more than mere appearance - it becomes functional and meaningful. Thus through the mimicry of others, fellow consumers or icons, fashion is created and it is through this mimicry – acceptance by a group in society – that fashion "…will always already present a more or less uniform image" (Loschek, 2009:135). Loschek (2009) supports her argument by suggesting that "…when clothes become fashion originates from the observer" (Loschek, 2009:138). Thus she proposes that fashion is defined by the observer, and as fashion is a social system based on communication, clothing becomes fashion through socially negotiated acceptance (Loschek, 2009:139).

The third view is from Fletcher (2008:119-120), who suggests that fashion and clothing are two different, but not opposing, concepts. Although the concepts contribute to functional and

[10] Loschek (2009:134) uses an example to illustrate the point - the choice to wear comfortable clothing or the need to wear fashion is an individual one: in this case the individual chooses between the tennis sock and a particular shoe in fashion.

emotional human well-being, the concepts are perceived by the user in different ways. On the one hand fashion can be considered a *symbolic* notion, which enhances an individual's emotional and psychological needs, and alludes to indicating identity. Clothing, on the other hand, is considered a *material* notion and alludes to physical and functional needs of the consumer. Fletcher (2008) suggests that the two terms therefore cannot be separated, yet remarks that not all clothing can necessarily be considered fashion, in as much as not all fashion manifests itself in garment form, as suggested in the introduction to this sub-section. Fashion is therefore inexplicably linked to fashion trends.

1.3.3.2 Trends and the fashion system

The term 'fashion trend' refers to the acceptance and popularity of a fashion style, and is used by forecasters to establish the direction of new fashion. Brannon (2005:405) argues that a trend is the awareness and rise in popularity of a style amongst consumers. The acceptance of style is consumer-driven, and this phenomenon is generally referred to as the 'fashion cycle'. A fashion cycle can vary in length, where a short length cycle can be considered a 'fashion fad'. A fashion fad is the acceptance of an intensely popular style for a short period of time, after which it falls into disuse. A longer fashion cycle, stretching over several seasons or years can be deemed to be never-ending, is generally considered to be a classic cycle (Diamond & Diamond, 2006:89-90; Posner, 2011:90; Clodfelter, 2008:166-168). In addition to the two above-mentioned fashion trends, a 'mega-trend' develops when, over a period of time, a shift influences a market, driven by economic, social, political, and change in technology (Posner, 2011:91).

The term 'fashion industry' consists of the textile, manufacturing and retail sectors and form part of the fashion system. These include the developing of fibres which are then woven, knitted or bonded into fabric, using the fabric to design and manufacture clothing or textile-related products, and selling the final product to a consumer (Diamond & Diamond, 2006:7-15). Mass production of clothing, which had its origin in the mid-nineteenth century, refers to the manufacture of products according to a standardised and mechanised process referred to as 'ready-to-wear' (RTW), which is the off-the-peg selling of clothes according to a standard size range in a varied price range. RTW should be viewed in opposition to making clothing to suit individual sizing requirements, a process referred to as 'bespoke clothing' (Waddell, 2004:194-197; Dias, 2008:31). Lavelle (2013:93) suggests that fashion should be considered as "…a complex global system consisting of design, production, distribution, adoption and consumption that are all equal in value".[11]

[11] Lavelle (2013) refers to authors such as Breward (2003:17), Craik (2009:82), Loschek (2009:23) and Niessen (2003:243).

Fashion therefore exists in social life as material object, as abstract idea, as social phenomenon, as a system, as a cultural value or as an attitude (Smal & Lavelle, 2011:193). Fletcher (2008) argues that clothing and fashion are separate concepts; however, the term fashion is generally accepted when referring to a style of clothing that follows popular trends. Thus, in this research, the word 'fashion' is used and, because the research focus is on ready-to-wear fashion and not bespoke fashion, the word fashion includes all clothing produced in volume. As the fashion industry could comprise of more than clothing, in this research the term 'fashion industry' will be used when referring to the design, manufacturing and selling of clothing products. The term 'textile' is the broad term used when referring to the sector or to textile related products that include linen, upholstery, textiles used for interiors or geo-textiles used in building and construction processes. A major component of a clothing product is the fabric it consists of, which is the result of a weaving, knitting or bonding process. To differentiate between the larger textile industry and the component used in clothing, in this research the term 'fabric' is used to describe any textile-related components needed in clothing.

1.3.3.3 Fashion and environmental sustainability as applied in this research

Based on the above definition of fashion, environmentally sustainable fashion refers to all fashion where the impact the product might have on the environment is taken into consideration and includes fashion products in which the components used have a low environmental impact during manufacturing. Therefore, fashion products produced from an environmentally sustainable approach should exert a minimal impact on the natural environment (in this case the landfill, for example) once they have outlived their purpose. The above implies that fashion is designed in a framework of environmental and social awareness and that this approach adds value and is economically sustainable in the current framework of the South African fashion industry. Therefore the concept 'design-driven', refers to products that are designed and produced taking the above four mentioned aspects (impact on natural environment, environmental awareness, social awareness and economic sustainability), that might impact the development of environmentally sustainable fashion, into consideration. The assumption therefore is that an environmentally sustainable approach is an integral part of product development and the decision-making process. This research will argue that a design-driven approach in the development of fashion in volume adds environmental value to the fashion product at the design stage and eco-awareness is enforced through the design (Smal, 2008). This section defined the main concepts pertinent to the focus and scope of this research, the next section will elaborate on the research design and methods applied in this research.

1.4 OVERVIEW AND STRUCTURE OF THE RESEARCH

In this section, an overview of the research is provided, in order to present how the research was ordered. This section therefore locates the research questions, aims and objectives of the research. The delimitation of the research is discussed, followed by a brief introduction to the research strategy. The section concludes with a chapter outline.

1.4.1 Research question, sub-questions and objectives

Recent studies in Europe, England and the United States of America have highlighted the importance of sustainable design practices within the fashion and textile industry. However, in South Africa, the discourse is in its infancy. The research starts from the viewpoint that design is fundamental in the development of environmentally sustainable fashion which is based on efficient use of resources, is cognisant of environmental and social awareness, and functions within an economically viable South African fashion industry. The purpose of this study is to develop an understanding – through a design-driven approach – of the role of environmental sustainability in the South African fashion industry, within the parameters of sound environmental practices and economic viability.

The main question that is posed for this research is:

What is the role of environmental sustainability in the South African fashion industry within the framework of a design-driven approach?

The main research question is divided into three sub-questions.

Sub-question 1:
How is environmental sustainability perceived as a global imperative in relation to environmentally sustainable design praxis?

The aim of this sub-question is to determine a global view on environmental sustainability in relation to environmentally sustainable design praxis.
Objective 1: To describe the role of environmentally sustainable design in business praxis by reviewing the work of prominent authors in business who include design as a component in business praxis.
Objective 2: To determine a basis for environmentally sustainable design praxis by reviewing leadings authors in the field.

The first sub-question forms part of the survey of scholarship and is discussed in Chapter 3.

Sub-question 2:

What is environmentally sustainable fashion design praxis in the fashion industry?

The aim of this sub-question is firstly to determine the development of environmentally sustainable fashion, and secondly to explore design-driven environmentally sustainable fashion praxis.

Objective 3: To describe the development of environmentally sustainable fashion design.

Objective 4: To examine design-driven environmentally sustainable fashion design praxis by reviewing prominent authors in the discipline of design and of fashion design.

The second sub-question forms part of the survey of scholarship and is discussed in Chapter 4 and Chapter 5.

Sub-question 3:

How is design-driven environmentally sustainable fashion praxis applied in the South African fashion industry?

The aim of this question is to determine fashion design praxis in the South African environmental fashion industry.

Objective 5: To develop a conceptual framework informed by the survey of scholarship and applied in the case study.

Objective 6: To analyse, synthesise and discuss the findings of the case and make a theoretical contribution with regard to design-driven environmental sustainability to the field.

The selected research design is explained in Chapter 2, and the application of the research design discussed in Chapter 6. The synthesis of the data of the third sub-question is discussed in Chapter 7 and the findings further deliberated on in Chapter 8. The suggested framework discussed in Chapter 9 presents the theoretical contribution this research study makes to the field. The above chapters answer Sub-question 3.

1.4.2 Delimitation of the research

The study will focus on environmental sustainability with a design-driven approach in fashion. It will therefore not include:

- an investigation into the carbon footprint in environmentally sustainable fashion production, or

- a discussion of the relationship between environmentally sustainable fashion and poverty alleviation.

Although fair trade and fair labour practices are aspects that are included and discussed in the framework to be used, these will only be viewed in relation to environmental sustainability in design, resourcing for environmental sustainability and eco-practices. Furthermore, the study intends to investigate the role of environmentally sustainable fashion design in business and environmental sustainability in fashion design praxis. Peripheral concepts such as consumer acceptance and consumption of environmentally sustainable fashion will be probed in relation to fashion design praxis.

1.4.3 Brief introduction to the research strategy

The research is based in a qualitative paradigm where an inductive approach is taken in order to explore and understand the context of environmentally sustainable fashion design (Babbie & Mouton, 2003; Gillham, 2000, Yin, 2009; Merriam, 2009). The research strategy is a single descriptive case study (Babbie & Mouton, 2003:281). The purpose of the strategy selected for this research is two-fold, namely, firstly exploratory and secondly descriptive. The first purpose of the strategy – the exploratory – was to gain insight into the phenomenon of environmental sustainability in the field of fashion design. The second purpose for the strategy selected was to allow an intensive investigation into the phenomenon. The case study consisted of the three identified sub-units who all are fashion businesses that design, manufacture and retail fashion products, and that have publically declared that they ascribe to environmental and social awareness in their praxis.

Contextualisation for the field was achieved through an extensive survey of scholarship, which comprised of four areas of inquiry, namely, environmentally sustainable design in relation to economic viability, environmentally sustainable design theory in broader contexts, environmentally sustainable design praxis, and design theory, design thinking and design activity. The survey of scholarship informed the development of a conceptual framework that underwent three iterations of refinement. The conceptual framework informed data collection. A multi-method approach to data collection was applied, consisting of interviews, document analysis and product analysis, to allow for thick description (Babbie & Mouton, 2003:281-283; Gillham, 2000:12-13). The analytical techniques applied in this research were pattern matching and explanation building (Yin, 2009:136-160). Data were organised and reported according to the conceptual framework. From the discussion of the findings emerges a proposed framework for the implementation of environmentally sustainable fashion design praxis.

1.4.4 Significance of the research

The South African fashion industry needs to be part of the current international discourse on positive environmental practices. In this research, the conceptual framework developed from the extensive survey of scholarship was used to guide the research and organise the research findings and was used to determine the role of design in the development of environmentally sustainable in fashion design praxis. Four specific aspects, which emerged from the research, can be used by retailers, designers and manufacturers in the fashion industry.

The first aspect refers to the importance of environmental sustainability in the fashion system, which supports the need for engagement in environmental sustainability in the fashion industry as highlighted in the SASTAC report (SASTAC Material issues report case study, 2014:20). The second aspect concerns current design praxis. The third aspect concerns the need for fashion education to provide the necessary support for development and implementation of environmental sustainability in fashion design praxis as suggested by Palomo-Lovinski and Hahn (2014:88) and Fletcher and Grose (2012:180-181). The fashion industry's inability to address environmental sustainability is partly due to designers not being enabled to do so, and thus the need for current curricula to address the gaps in knowledge is imperative. The last aspect refers to the development of a new framework to support, develop and encourage all of the above-mentioned.[12] This study is unique to the South African fashion industry.

1.4.5 Chapter outline

The thesis comprises of nine chapters, as presented in Figure 1.3:

[12] The four aspects are thoroughly discussed in Chapter 9, under section 9.2.

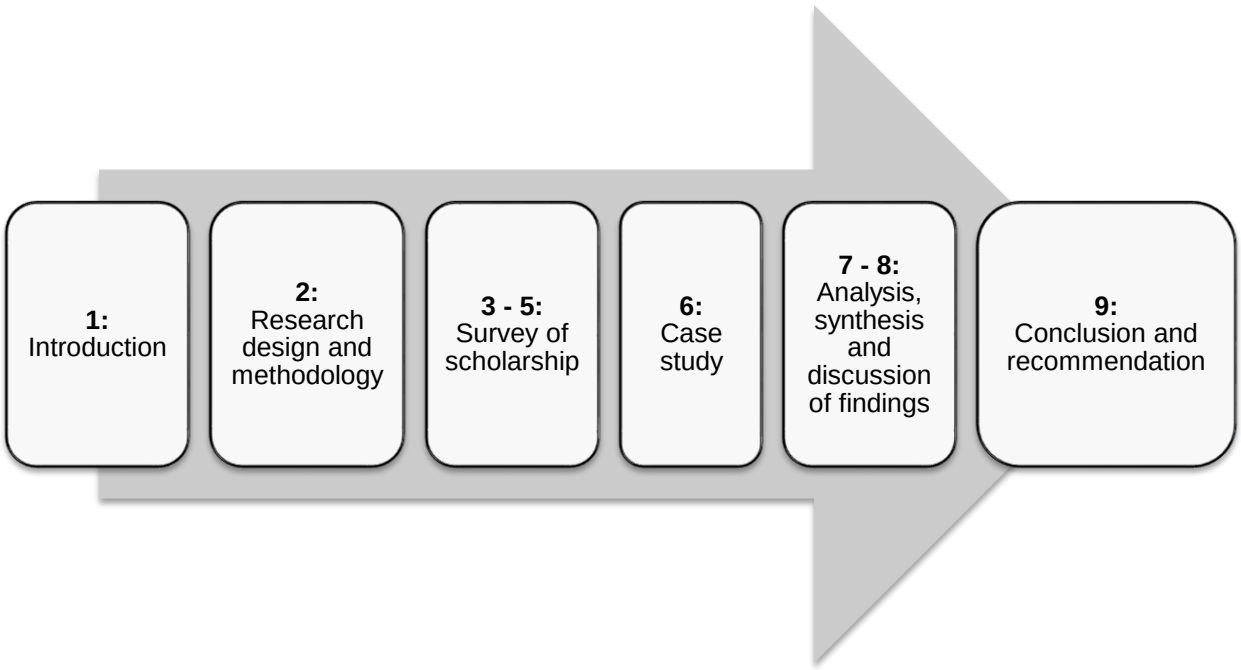


Figure 1.3: Visualisation of chapter outline
(developed by author)

The study consists of nine chapters, each of which is presented below, and discussed with regard to the reason for the chapter, the content of the chapter and how the chapter aligns to the research question, sub-questions and objectives.

Chapter 2: In Chapter 2, the research strategy applied in this research is thoroughly described. The chapter includes an overview of a qualitative research approach, which is followed by a discussion of case study research. The research strategy applied in this research is discussed in detail and is followed by an explanation of research ethics and its application to this study. The chapter concludes with a discussion on ensuring quality of the research as applied to this research.

Chapter 3: The purpose of Chapter 3 is two-fold, firstly, to obtain a broader perspective of environmental sustainability as viewed from a business perspective, and to explore sustainability in the world of business, economic advantages that environmental sustainability poses, a business strategy for environmental sustainability and what role design has in the above. Secondly, Chapter 3 establishes a base for environmentally sustainable design, to provide an overview of environmentally sustainable design praxis, and reviews theoretical approaches to environmentally sustainable design. This chapter forms part of the survey of scholarship that provides a conceptual framework for the case

study. The chapter establishes a global view on environmental sustainability in relation to environmentally sustainable design praxis as suggested in Sub-question 1, Objective 1 and 2.

Chapter 4: Chapter 4 explores fashion design praxis by reviewing its processes, from developing fibre to the disposal of the product, in order to determine where and how environmental sustainability can be applied. The purpose of the chapter is to achieve Objective 3 of the research study and answers the first part of Sub-question 2. As with Chapter 3, this chapter forms part of the survey of scholarship that informs the conceptual framework for the case study.

Chapter 5: The purpose of Chapter 5 is to explore the development of environmental sustainability within the fashion industry and to explore design-driven fashion praxis. Design and the designer is reviewed in a broader context, and then applied to fashion design praxis and the fashion designer. The chapter ends with a discussion of a suggested new paradigm for implementing sustainable fashion design to determine what the role of the fashion designer should be. Therefore Chapter 5 achieves Objective 4 of Sub-question 2, and contributes to the development of the conceptual framework used in the case study.

The above three chapters namely, Chapter 3, Chapter 4 and Chapter 5, collectively inform the development of the conceptual framework, used in the case study and thereby achieves Objective 5 of Sub-question 2.

Chapter 6: How the research strategy (presented in Chapter 2) is applied in this research, is documented in Chapter 6. The chapter starts with the development of a conceptual framework that informs the data collection and data analysis. The sub-units that participated in the case study are discussed with specific reference to the interview process. The chapter then presents the process of data collection and analytical strategies and techniques applied in this research.

Chapter 7: In Chapter 7, the data gathered is analysed by reporting on the findings of the semi-structured interviews and the supporting documents and products analysed. This chapter therefore, is a synthesis of the facts as they emerge from the raw data. The presentation of the synthesis follows the format of the conceptual framework and is divided into sections that mimic the four layers that inform the framework, namely, vision, strategy, systems and role players. Each sub-unit is therefore discussed by considering what the data reveals with regard to the sub-unit's approach to environmental sustainability (vision), the route the sub-unit uses to apply the vision (strategy) and the way these strategies are

achieved (systems).[13] The chapter concludes with a summary and discussion of key points.

Chapter 8: Chapter 8 presents a discussion of the findings by reviewing the summary of key points presented in Chapter 7, in order to consider similarities and differences between the three sub-units presented in the findings.

Chapters 7 and 8 analyse, synthesis and present the findings of the case study and achieve Objective 6 of Sub-question 3.

Chapter 9: The final chapter, Chapter 9, reviews how the research questions presented were answered, presents reflects on the contribution that the study has made to the fashion design discourse, engages with the limitations experienced during the research, reflects on the way forward, and concludes with a final comment.

Chapter 9 expands on the findings discussed in Chapter 8 and suggests a design-driven environmentally sustainable framework for the South African fashion industry.

[13] The description of the role players falls under the description of the sub-units for as far as is possible with regard to the research ethics.

CHAPTER 2

RESEARCH STRATEGY

The primary goal of using this [qualitative] approach is defined as describing and understanding (Verstehen*)* rather than explaining human behaviour.

(Babbie & Mouton, 2003:270)

The purpose of this chapter is to explore and determine the research strategy applied for this research project, as presented in Figure 2.1.

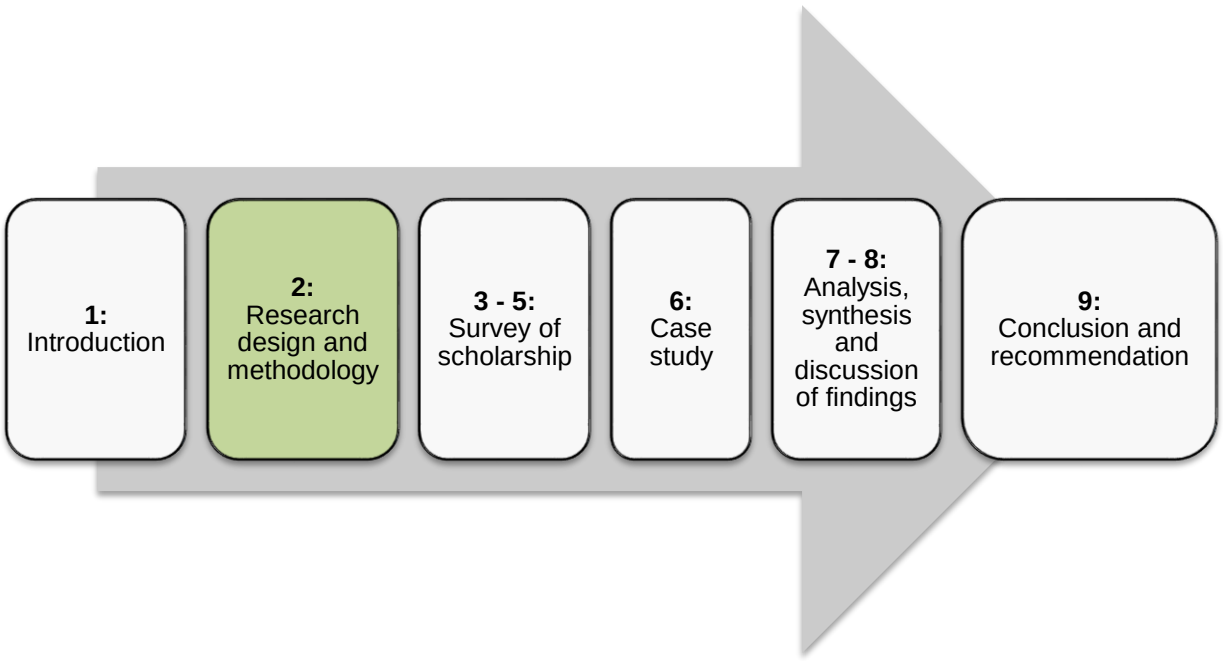


Figure 2.1: Schematic representation of case study – research strategy (developed by author)

Three particular authors on methodology inform this research, namely Babbie and Mouton, *The practice of social research* (2003); Stake (1995), *The art of case study research* and Gillham (2000), *Case study research methods*. In addition, the work of De Vos, Strydom, Fouche & Delport (2003), Yin (2009), Munro (2012), Corbin and Strauss (2008), Eisenhart and Jurow (2011) and Merriam (2009), is used to support this chapter. The chapter starts by providing an overview of a qualitative research approach after which a discussion of case study research follows. The research strategy applied in this research project is discussed in detail and is followed by an explanation of research ethics and its application to this study. This chapter therefore provides the platform in order to discuss the research process applied in the research undertaken, in Chapter 6. The chapter concludes with a discussion of how the quality of the research as applied to this research project can be assured.

2.1 A QUALITATIVE RESEARCH APPROACH

In this section an overview of a qualitative research approach is presented in order to provide a framework for the research strategy applied to this research project. Babbie and Mouton (2003:270) describe qualitative research as taking an insider point of perspective, as well as

taking a broad methodological view. The authors (Babbie & Mouton, 2003:270-273) further argue that a qualitative research paradigm:

i. takes place within the natural setting of the object of study as this is where the research is deemed to be especially appropriate;[14]
ii. is focussed on process rather than outcome, where the researcher wishes to study the events as they occur;
iii. emphasises an emic (insider) view, which is unique to qualitative research;
iv. relies on thick detailed descriptions of the specifics studied in order to understand the specifics studied;
v. requires a holistic research strategy, thus attempting to understand and describe events in their natural context, so as to confer contextual meaning to the events;
vi. approaches the research from an inductive point of view, where the research starts from a natural setting, describing events as accurately as possible;
vii. results in new theory, where the emphasis falls on developing and building theory based on interpretation;
viii. is one where the researcher is the main instrument in the research.

Gillham (2000:2-7) argues that the naturalistic researcher differs from the experimental investigator on two basic levels. Qualitative research cannot, due to human behaviour, focus on generalizable behaviour, as each event has specific influences that shape its existence. Gillham (2000) further argues that qualitative research takes an inductive approach to research, which means that the research theorises and makes sense of what the data gives after it has been found.

Munro (2012:42-46) posits that a qualitative research paradigm is based on three fundamental positions, namely the world people live in and their lived experience; how people interpret the world they live according to their own views, and that, due to the variable of interpretation, findings cannot be generalised and thus interpretations are applicable to specific situations. Munro (2012:43) therefore states that qualitative research understands and describes the context of the experience studied and builds or applies a theory by which to interpret or understand the experience (shared meaning).[15] The author describes inductive thinking as a process of explaining the lived experience from which a theory emerges and assists the interpretation (Munro, 2012:43-44).

[14] The natural setting referred to is such that it "…embodies a set of assumptions about research that is the exact opposite of an approach (quantitative research) that emphasises control and artificial settings" (Babbie & Mouton, 2003:271). Controlled and artificial settings are mechanisms predominantly used in quantitative research.

[15] Munro (2012:47) argues that the interpretative researcher moves "…from clusters of shared experience to clusters of shared meaning."

Babbie and Mouton (2003:273-274) and Gillham (2000:7) highlight the concern about subjectivity in qualitative research. In qualitative research the researcher needs to control factors that might affect the validity of the data. This means that the research does not ignore the objective but investigates what lies behind the objective evidence, and thus seeks to find underlying reasons. The researcher therefore is a "…participant observer who acknowledges (and looks out for) their role in what they discover" (Gillham, 2000:7). In a qualitative research paradigm the researcher thus aims to discover the meaning behind the results of the data obtained, to understand and recognise the context within which the data has emerged and to search for evidence in the context (Gillham, 2000:8).

This research project therefore falls within a qualitative research paradigm as it explored environmental sustainability in the fashion industry of South Africa from an emic point of view. The research took on an inductive approach. The objective of the paradigm was not to generalise the findings, but rather to interpret the phenomenon of environmental sustainability in the fashion industry in South Africa, in order to discover meaning within the context of the study.

2.2 CASE STUDY RESEARCH

In this section, case study research is explored by reviewing several notable authors, in order to develop a research strategy for this research project. Therefore, in this section the principles that make-up a case study, the role of a conceptual framework in a case study research design and methods and analysis of data collection, are discussed.

Research methodology literature is not clear about the various types of case studies. De Vos *et al.* (2003:276) differentiate between three types of case studies, namely an intrinsic case study, an instrumental case study and a collective case study. Babbie and Mouton (2003:281) refer to six case study types, namely individual case study, community case study, social group studies, studies of organisations and institutions, studies of roles, events and relationships, and studies of countries and nations. The sources all agree that case study research is an intensive investigation into a specific, clearly delineated circumstance, and generally involves the interaction of the case with its context which needs to be a bound system, so that the case to be studied is clearly bracketed from other systems (Babbie & Mouton, 2003:281; Merriam, 2009:40; Yin, 2009:18).

Case studies are often selected for what they could reveal about the phenomenon studied (Merriam, 2009:46-48). The author categorises case study research into four categories, namely intrinsic, instrumental, collective or multiple; and evaluative.

Intrinsic:	The research stems from the researcher's own interest. The purpose is not theory building *per se* and thus the study is undertaken because of the interest in the phenomenon.
Instrumental:	The research provides insight into a generalisation or to redress a generalisation in the phenomenon.
Collective/Multiple:	A number of units (of analysis – as per [Yin, 2009]) are studied to investigate the phenomenon.
Evaluative:	The research describes, explains and judges.

Stake (1995:8) argues that in case study research the research attempts not to generalise, but rather aims at being particular, attempting to understand the uniqueness of the case. Case studies are both descriptive and explanatory and can be used as research tools to solve a given problem or to understand a specific phenomenon in a practical manner. Case studies are, due to their complexity, interdisciplinary in nature (Scholz & Tietje, 2002:5).

The defining characteristic of a case study is the emphasis on an individual unit, which may consist of one or several, interrelated, units of study (Babbie & Mouton, 2003:281; Merriam, 2009:40). Yin (2009:11; 18) mentions that the strength of a case study is the ability to contain a number of data collection methods such as interviews, observation, artefacts and documentation. Merriam (2009:44) concurs and states that the strength in a case study research design lies not in the method applied but in how the case has been probed and in its relationship to the final report. Gillham (2000:1) describes a case as a unit of current activity that is embedded in the real world and which should be studied in context. The case study researcher "…working inductively . . . develops grounded theory: theory that is grounded in the evidence that is turned up" (Gillham, 2000:12). A case study becomes the main method which is supported by several sub-methods that feed into the main method, as different methods have different strengths and weaknesses (Gillham, 2000:13).

According to Merriam (2009:43-44) a further description of a case study and its uniqueness is that research design is particularistic, descriptive and heuristic, and all three form part of the special features of case study research. 'Particularistic' refers to a particular phenomenon, what this phenomenon is and what it might represent and encourages an understanding of occurrences of current practice. 'Descriptive' refers to the research project which should obtain a thick description by means of multiple perspectives on the identified phenomenon, and of which the result is a complete description of the phenomenon. 'Heuristic' refers to a holistic and illuminated understanding of the phenomenon presented. Merriam (2009:44) suggests that a heuristic view should confirm what is known about the phenomenon, or it should discover new meaning.

In a case study design the researcher enters the field with knowledge of the relevant literature (De Vos *et al.,* 2002:275). Gillham (2000:6-7) argues that the researcher reviews the context in which the research questions arose, and the possible explanations might emerge. A key characteristic of a naturalistic case study researcher, as suggested by Gillham (2000:6-7), is to understand what lies behind the objective evidence that the research reveals. It is in seeking to find the underlying reasons and the resulting outcomes that can lead to the key understanding of the phenomenon studied. The case study researcher is therefore an "…active participant who acknowledges (and looks out for) their role in what they discover" (Gillham, 2000:7).

A key characteristic of case study research therefore requires that the researcher uses multiple sources of evidence (Gillham, 2000:2). De Vos *et al.* (2003:275) argue that exploration and discovery in a case study research design is through detailed and in-depth data collection methods such as interviewing, analysing documents and observation and analysis of archival content. Munro (2012:44-45) argues that a strategy of triangulation becomes important in qualitative research. Triangulation refers to "…the interface between two or more different fields or domains that interact" (Munro, 2012:45). Thus, triangulation is a reciprocal interaction between theory, the lived experience, the data collected and the methods applied.

A case study is an intensive investigation into a situation, and the size and the scope of the situation is predetermined. In this research, the particular bounded phenomenon studied is environmental sustainability in the fashion industry. The research undertaken in this research project consists of a descriptive case study and the methodology is aligned to Babbie and Mouton's (2003:281) point of view. The research strategy thus was a single descriptive case study, in which a heuristic perspective of the phenomenon was applied, as suggested by Merriam (2009:44). Three pre-selected sub-units formed part of the study, as a single case study that consists of sub-units can result in greater variance and more interpretation, which can strengthen the validity and stability of the findings (Merriam, 2009:49-50; Yin, 2009:46-53).

Having multiple sub-units in the single-case requires a more complex research strategy (Yin, 2009:52). These include the principles of case study research, the role of a conceptual framework in case study research, the methods of data collection in case study research, selecting case study participants, and the case study analytical strategies. The following sub-sub-sections therefore explore the elements of a complex research strategy in depth.

2.2.1 Principles of case study research

Babbie and Mouton (2003:282-283) emphasise four important principles for case study research, namely: conceptualising the case study research, obtaining detailed and in-depth

descriptions (contextualisation), using multiple sources of data, and developing analytical strategies.

In case study research conceptualisation entails developing a framework that clearly outlines the principles guiding the study. The purpose of contextualisation (generating a detailed and in-depth description of the case) is to map the details of the environment (Babbie & Mouton, 2003:282). Using multiple *sources* of data is one of the key characteristics of case study design so that the process of analysis through triangulation can proceed (Babbie & Mouton, 2003:282; Gillham, 2000:12-13). Babbie and Mouton (2003:282) suggest that the reason for using multiple sources for evidence is to be able to replicate and converge data obtained. This allows for thick description, ensures triangulation and is necessary in a multiple case study design, as depicted in Figure 2.2 (Babbie & Mouton, 2003:283; Gillham, 2000:13, Munro, 2012:45-46).

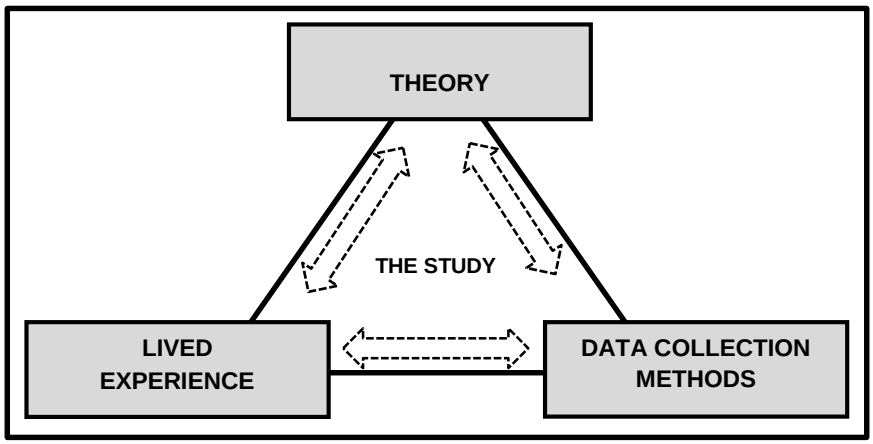


Figure 2.2 Triangulating the study
(based on Munro, 2012:44-46)

According to Munro (2012:45), triangulation specifically refers to understanding the lived experience, collecting data that is drawn from the lived experience, and applying theory that can be used to understand the lived experience and interpret the data.

Babbie and Mouton (2003:283) argue that case study research should be guided by three strategies for analysis. The first – organising the findings – involves developing clear conceptual guidelines for the categories for empirical data collection, discussing these categories in the findings, as well as in a discussion on the findings. In case study research, giving account for the multidimensionality of the data is important, therefore the research report presented needs to reflect the multiple patterns of phenomena and describe the context and conditions of these patterns. The result of the above is evidence that contributes to the dimensions of thick description. Secondly, the generalizability of the findings needs to be based on evidence, and thus linkages between findings and previous knowledge should be

established. Thirdly, a case study has the potential for theory building. Gillham (2000:34-36) concurs with the above, namely, that evidence is primary and should be constantly tested and that theory emerges from the findings.

2.2.2 Role of the conceptual framework in case study research

A conceptual framework becomes the guiding principle in a case study (Babbie & Mouton, 2003:282). Eisenhart and Jurow (2011:699-712) mention that a conceptual framework is developed from an extensive literature review, of which the intention is to summarise important previous research and to develop a theoretical perspective. The conceptual framework then becomes a skeletal structure to guide new research. Corbin and Strauss (2008:125-127) describe a conceptual framework as a process or tool that can assist a researcher to plan the research at proposal stage, and to assist the research process further.

Complex conceptual frameworks often evolve into more theory building, and the relationships, guidelines, concepts, categories and concepts proposed by the researcher are based and compared against literature selected and data collected. The result thereof is that conceptual frameworks become more integrative and complex.

2.2.3 Methods of data collection in case study research

Babbie and Mouton (2003:282) and Gillham (2000:12-13) argue that using multiple sources of data is important in a case study research design and is necessary for reliability. The authors (Babbie & Mouton, 2003:282) argue that thick description requires the researcher to view multiple sources of evidence by using multiple methods that are viewed from multiple perspectives. If phenomena are repeated from various approaches and different data sets, the reliability of the findings are strengthened (Babbie & Mouton, 2003:283; Yin, 2009:101-113). In a case study that has multiple units of analysis, recurring phenomena across the cases can add to the thick description (Babbie & Mouton, 2003:281-3).

In addition to the sources of evidence, the three principles guiding data collection are using multiple sources of evidence, developing a case study database, and documenting evidence of process (Yin, 2009:101).[16] The first principle – using multiple sources of evidence – is a key element in case study research strategy and is necessary to obtain data triangulation. Data triangulation is needed to augment and corroborate evidence and allows for convergence of

[16] The term ‘chain of events’ for this research is referred to as ‘evidence of process’

evidence (Yin, 2009:103;115-116; Babbie & Mouton, 2003:282; Gillham, 2000:12-13).[17] Convergence of evidence is typical of a single case study research strategy. The second principle – developing a case study database – is a method of organising and documenting data retrieved. Yin (2009:118-122) refers to two database collections: firstly, evidence arising from the lived-experience and, secondly, evidence that arises from text, which could consist of pertinent documents, notes, tabulated information and narratives. A comprehensive and logically developed database adds to the reliability and trustworthiness of the data and the analysis thereof. The third principle – documenting the evidence of process – needs to be done in order to increase the reliability of the case study. Evidence of process is in itself evidence, which also aids the validity of the research and adds to the quality of the research (Yin, 2009:122-124).

2.2.4 The participants in case study research

Although traditional sampling methods are not necessarily applicable in case study research, Babbie and Mouton (2003:281) argue that multiple perspectives are needed to attempt to understand the case. Stake (1995:5-6) argues that representivity or generalisation, even in a collective case study, is difficult to defend, however a critical method for selecting units for the case is necessary. Stake suggests that in case study research, balance and variety and the opportunity to learn from the sample selected, are more important than arguing that the case can be considered representative of the phenomenon (Stake, 1995:6). According to Stake (1995:8), what is of particular importance in case study research is particularisation – to come to know the selected case well with regard to what it is and what it does and not how it differs from other cases.

Babbie and Mouton (2003:166-167) mention that a purposive sample is based on the researcher's own knowledge of the population and the nature and aim of the research. Purposive sampling is a non-probability sampling technique in qualitative research. De Vos *et al.* (2003:334) argue that purposive sampling is used because of a specific interest in the sample for the research. Thus, the parameters for an envisaged research project needs to be critically conceptualised so that the sample can be carefully and specifically selected.

[17] Yin (2009:116) cites Patton and refers to four sets of triangulation strategies, namely data triangulation, investigator triangulation, theory triangulation and methodological triangulation.

2.2.5 Methods of data analysis in case study research

2.2.5.1 Analytical methods

Yin argues (2009:129) that in order to extract a diverse set of information from the raw data one needs to develop strategies for data extraction and analysis, and thus suggests a variety of analytical methods for data manipulation. These include using data matrixes, tabulating frequency, creating flow-charts, examining the complexity of tabulations and their relationships and using information in chronological order. An analytical method ensures that the raw data is eventually shaped to tell the story of the research, and a well-developed method ensures that the evidence is treated fairly, produces compelling analytical conclusions and rules out alternative interpretations (Yin, 2009:130). To achieve the above, Yin (2009:130-135) suggest four approaches to analysis.

The first approach involves relying on a theoretical proposition as reflected in the research question, developed from theoretical underpinnings and the objectives of the study, and thus theoretical orientation would lead to data collection (Yin, 2009:130-131). The second approach is to develop a descriptive framework for the research, developed from initial reviews of literature. This is generally when data have been collected without setting a research question or theoretical proposition (Yin, 2009:131). A third approach is using a mixed method approach, applicable when the case yields substantial quantitative and qualitative data (Yin, 2009:132-133). The fourth analytical approach is to examine rival explanations by incorporating the first three approaches (Yin, 2009:133-135). Yin (2009:130) suggests that the above analytical approaches are not mutually exclusive and any combination of them is possible.

2.2.5.2 Analytical techniques

Yin (2009:136-160) suggests five analytical techniques to be considered, namely pattern matching, explanation building, time-series analysis, logic models and cross-case synthesis. Stake (1995:71-88) also refers to pattern matching (categorical aggregation) as an analytical technique; however he emphasises direct interpretation, that is, coming to understand the case, as equally important. Both categorical aggregation and direct interpretation depend on the search for patterns that are forthcoming from the research question and analysis; therefore these imply a thorough understanding of issues and context relating to the case (Stake, 1995:78).

Having discussed the generic understanding of case study research, this thesis now turns to an application of this understanding for the specific research project undertaken. The following sub-sections therefore explore the elements applied in this research in depth. These include six aspects. The first explains the research strategy selected, the second applies the principles of this case study, and the third element includes explaining the role of a conceptual framework in this research with regard to research protocols and developing a conceptual framework to

guide data collection. The fourth element to be discussed describes the multiple methods of data collection applied in this research, the fifth refers to profiling the case study participants, and the sixth element explains the case study analytical strategies applied to this research.

2.3 RESEARCH STRATEGY: THE CASE STUDY OF THIS RESEARCH

In this section, the research strategy applied in this research is discussed, by conceptualising the case, contextualising the case, considering the sources of data and data collection, and the analytical strategy applied in this case study. According to Babbie and Mouton (2003:282-283), the first principle in case study research – conceptualising the research – requires an in-depth investigation into the phenomenon to be studied prior to commencement of the study. Therefore, prior to the study, an interest in the phenomenon of sustainable fashion design, and a need to develop the academic discourse in the discipline of fashion design, resulted in the focus of the study. Gillham (2000:7) argues that the naturalistic researcher is an active observer, who should be able to grasp the informal reality of a phenomenon, which can only be understood when one is immersed in the context of the field of study. The researcher, as fashion design educator, is knowledgeable in the field of fashion design, but acknowledges that a comprehensive understanding of environmental sustainability in this field in South Africa is in its infancy.

The rationale for selecting a single-case study strategy was two-fold. The research explored sustainable design, design thinking and design praxis, with the expectation of developing a framework for fashion design praxis in environmentally sustainable design. This in turn, led to the building of a new model for environmentally sustainable fashion design, as suggested by Yin (2009:35-36) and De Vos *et al.* (2003:268). Secondly, the three sub-units which were part of the single-case are not necessarily representative of the field, but provided some sense of being representative, as suggested by Yin (2009:48). It can also be stated that the sub-units are currently embedded in the real world, following Gillham's (2000:12-13) recommendations.[18] The case study therefore was based in a qualitative paradigm where an inductive approach was taken in order to explore and understand the context of environmentally sustainable fashion design. This approach enabled the researcher to interpret and apply, or develop theory, in order to expand on the academic discourse of the field. The strategy and purpose of this research was two-fold. Firstly, the research was exploratory, in order to gain insight into the phenomenon of environmental sustainability in the field of fashion

[18] The use of the term is a personal decision and is based on Yin's (2009) explanation of the importance of units of analysis in case study research. The single case in this research study is viewed as the unit, with three specific selected sub-units forming part of the case. Therefore, the companies participating are referred to Sub-unit 1, Sub-unit 2 and Sub-unit 3 of the case.

design and, secondly, was descriptive in order to allow an intensive investigation into the phenomenon.

The case study research strategy employed for this research as single case study is depicted in Figure 2.3. In brief, the strategy applied in this research is as follows. An extensive survey of scholarship, consisting of three chapters, informed the development of a conceptual framework. The conceptual framework was applied to data collection and formed the basis for the analysis of the data. Analysis and synthesis of the data is presented, which is followed by a discussion of the findings. The study concludes with suggestions on the way forward.

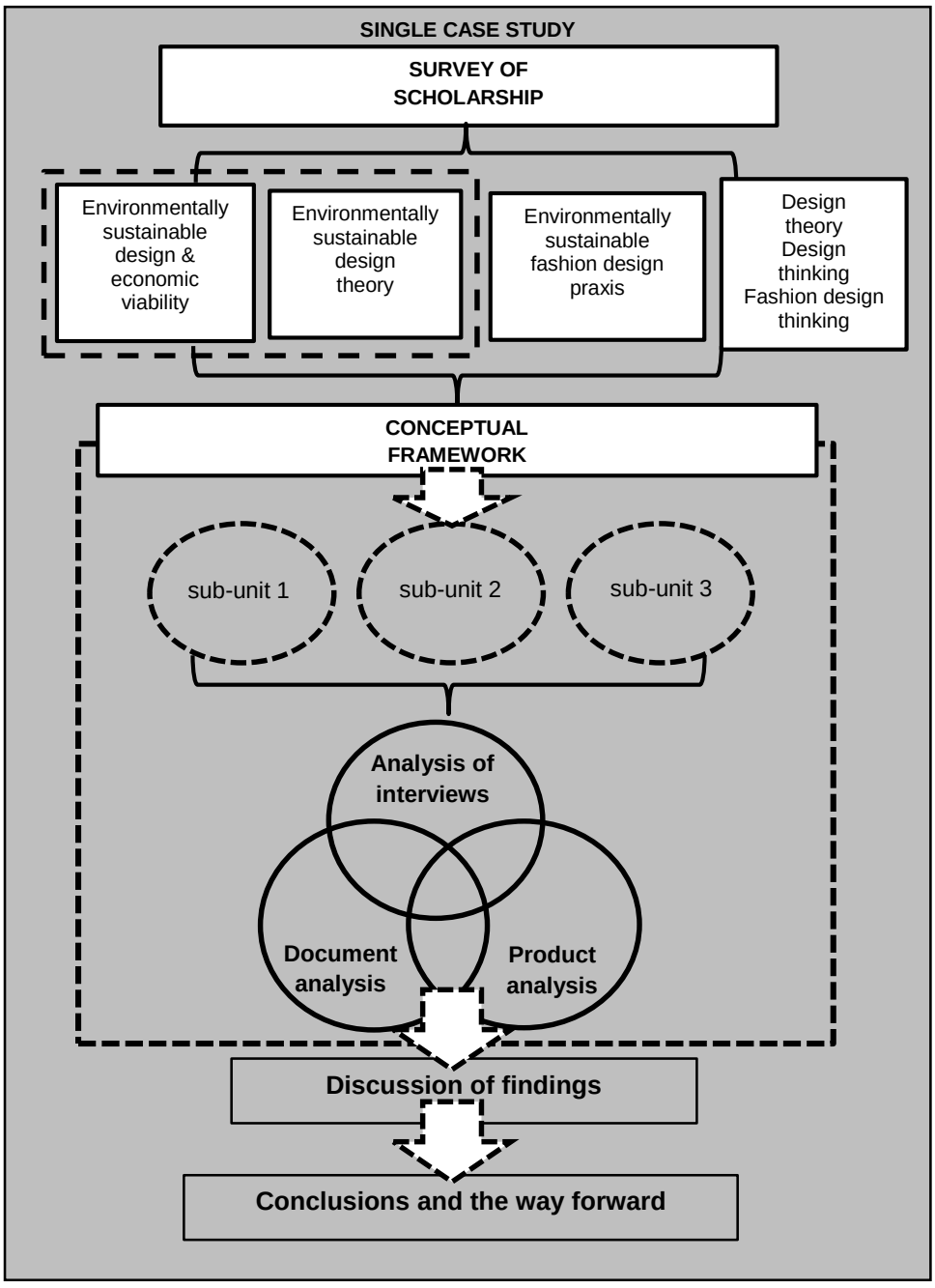


Fig 2.3: Research strategy for this research
(developed by author)

The principles of case study research that were applied in this case study strategy are described briefly below and a thorough explanation is supplied in sub-sub-sections 2.4.1 - 2.4.5. The four principles are:

i. Conceptualisation and *contextualisation:*

Conceptualisation and contextualisation for this research required a three-step approach. Firstly, a well-developed proposal aided the conceptualising of the research and became the skeletal structure which informed the research on an ongoing basis. The proposal was developed from prior engagement in the field, an initial literature review and personal experience as a fashion design educator. Secondly, an extensive survey of scholarship assisted in contextualisation and aided the understanding of the field. The survey of scholarship (as presented in the following chapters) focussed on four particular areas, namely, environmentally sustainable design in relation to economic viability, environmentally sustainable design praxis in broader contexts, environmentally sustainable fashion design praxis, and design theory, design thinking and fashion design thinking. Thirdly, the above four areas were explored in the survey of scholarship that formed the basis for a conceptual framework that informed data collection and analytical strategy.

ii. Multiple sources of data:

Multiple sources of data were used to allow for thick description. The data collection methods selected and applied were based on Yin's (2009) three principles guiding data collection, namely, using multiple sources of data to aid triangulation, developing a case study database throughout the research, and developing a comprehensive evidence of process.

iii. Analytical strategy:

The analytical strategy was based on what Yin (2009:130-131) refers to as strategy one – where the data collection is led by the study's theoretical orientation. The strategy followed is aligned to Babbie and Mouton's (2003:283) suggestion of organising the findings in a manner that ensures data saturation, allowing the themes to be developed through data refinement, and allowing new knowledge to emerge. The analytical techniques applied in this research followed Stake's (1995:78) suggestion of direct interpretation as analytical technique, which allows for pattern matching and thick description. Figure 2.4 is a schematic representation of the triangulation in this research.

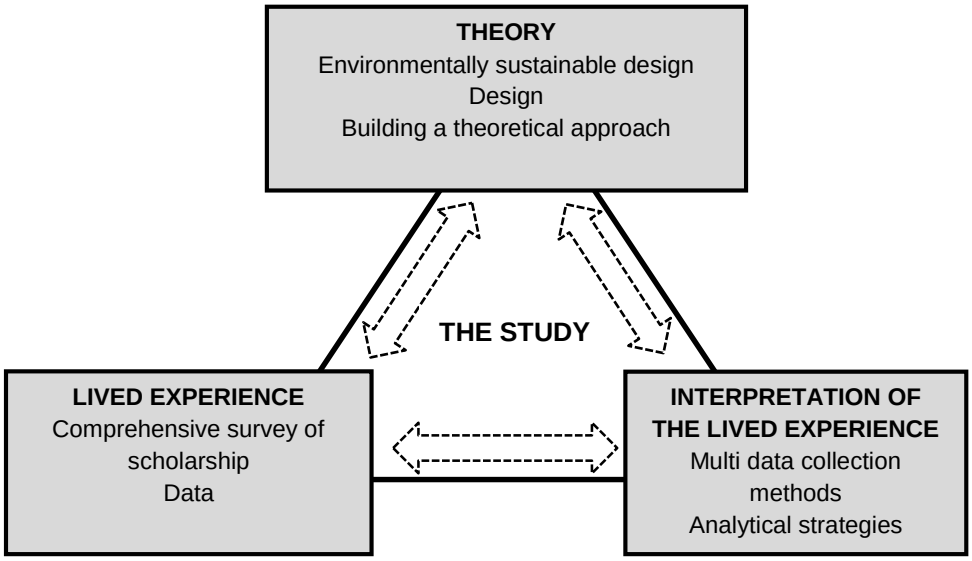


Fig 2.4: Triangulation for unit of analysis
(based on Munro, 2012)

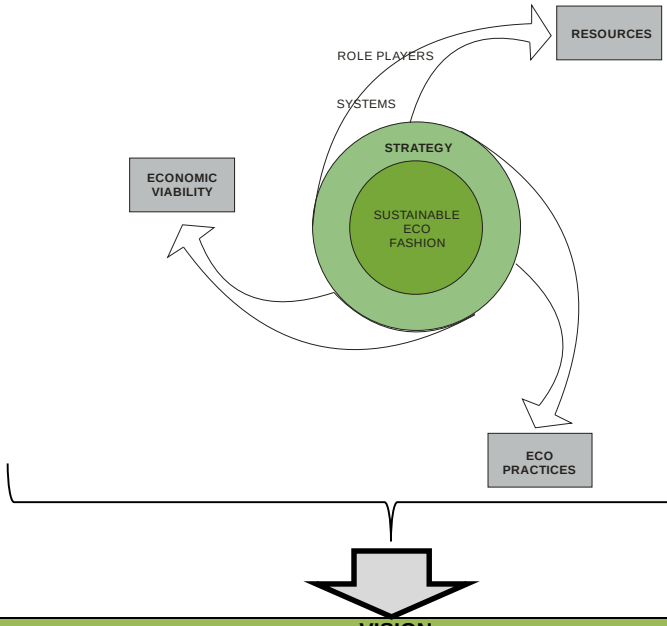
The four principles encouraged triangulation in the research by, firstly, enabling the lived experience to influence the emerging theoretical approach with regard to data collection and analytical strategy. Secondly, they allowed the theory (both emerging and existing) to guide the interpretation of the data in order to understand the lived experience, and thirdly, by drawing the data from the lived experience and interpreting that through theory.

2.3.1 Development of a conceptual framework

As defined in Chapter 1, sustainable design consists of design strategies that enable efficient use of resources, that develop environmental and social awareness and that are economically viable.

2.3.1.1 Conceptual framework

The conceptual framework was developed as part of the development of the proposal. The framework was informed by prior research on the phenomenon and an initial literature survey, and subsequently, after proposal acceptance, thus informed the start of the extensive survey of scholarship. The conceptual framework consists of three areas for consideration, namely economic viability, resources and eco-practices. In addition, four layers form the base of the framework, namely vision, strategy, systems and role players. As seen in Figure 2.5, the vision informs the strategy which is enabled through systems and involves role players to achieve the vision.



VISION Vision of the company with regard to developing sustainable eco-fashion		
STRATEGY Plan set in place to achieve vision		
SYSTEM Systems developed to ensure strategy remains implemented (auditing of sustainable development) (quality)		
ROLE PLAYERS Who is involved		
RESOURCES	**ECO-PRACTICES**	**ECONOMIC VIABILITY**
Product criteria Innovative use of resources Sourcing of components and supply chain (management) Manufacturing processes and cleaner production methods	Eco- and social awareness Data – knowing what you do Training Fair trade and labour practices Product lifecycle	Finding the advantage Global versus local Innovative use of resources

Figure 2.5: Initial conceptual framework for environmentally sustainable fashion (developed by author)

The three following chapters of the survey of scholarship, namely environmentally sustainable design in relation to economic viability, environmentally sustainable design in broader contexts, and environmentally sustainable design praxis, inform and develop the conceptual framework and form the basis from which the data was collected and analysed.

2.3.2 Case study participants: profiling the sub-units

The aim of this research project is to critically reflect on environmental sustainability from a design-driven approach in the South African fashion industry. The sub-units that were selected for the research therefore are companies where design is integral to product development. The sub-units do not represent all environmentally sustainable fashion design in the fashion industry in South Africa but can be viewed as typical projects with regard to design for environmentally sustainable fashion (Yin, 2009:48). The sub-units are representative of small

to medium apparel manufacturing enterprises in the fashion industry in South Africa, with sub-unit 1 being the largest and sub-unit 3 being the smallest enterprise. Sub-unit 1 consists of an extensive design room in South Africa but manufactures all product off-shore. Sub-unit 2 is a small boutique operator that designs and manufactures products in-house and supplements operations with making use of local cut-make-and-trim (CMT) manufacturers.[19] Sub-unit 3 is a designer that has all products manufactured by CMT enterprises in Africa. The profile of each unit is listed in Table 2.1.[20] Willingness to participate was determined at the proposal development stage and all three sub-units agreed to take part in the study.

Table 2.1: Participating sub-units

	Sub-unit 1	**Sub-unit 2**	**Sub-unit 3**
SIZE	Largest sub-unit in the case study. Company consists of design, manufacture and has several own retail outlets in the country.	Sub-unit is medium in size. Owner is also designer. Company consists of design, manufacture and own retail.	Sub-unit is small, referred to as a design studio. Designer is owner. Company consists of design only.
ESTABLISHED	1992	1995	2004
PRODUCTION	Design and product development at head office in Cape Town, South Africa. All sourcing, manufacturing off-shore	Design, product development at premises in Johannesburg, South Africa Some manufacturing completed in-house, some outsourced using small CMT facilities in the Gauteng region Sourcing local and international	Design at home-based studio All manufacturing outsourced, using local and Africa-based CMT facilities Sourcing local and international
LABEL(S)	Two labels, one ladies'-wear and one children's-wear	Ladies'-wear Bridal wear	Predominantly ladies'-wear High-end fashion
DESIGNERS	Design room Several designers	Two designers	Owner is designer

[19] CMT enterprises are companies that only manufacture and are not involved with the developing or retailing of the products. CMT's are generally used if in-house expertise or infrastructure is not available. CMT enterprises vary in size and some will manufacture smaller volume, where others, as in the case with unit 1, will manufacture higher volumes of products.

[20] Chapter 7, Section 7.1, provides further information on each sub-unit.

RETAIL	Retail outlets in all major centres in South Africa Boutiques under label of Sub-unit Ladies' and children's-wear sold in own store, or in a combined store.	One retail outlet in the Gauteng region	Supplies various retail outlets Supplies to several boutiques Markets products on-line
MARKETING	Own website	Active on Facebook Uses Facebook to communicate to clients Participates in international and regional fashion shows	Own website Participates in international and regional fashion shows
ECO-PHILOSOPHY AND APPLICATION[21]	Referred to as their values. Good business sense with responsible ethical values. Key words they use are: - Family first - Go organic - Always ethical - Lasting quality - Give back Philosophy: Creating relaxed and natural clothing in harmony with a return to nature. Purchase of products also contributes to social development projects in under privileged Africa	Being sensitive to environmental concerns. Making use, where possible, of natural fibres and pigment dyes Products include old-fashioned techniques, i.e. smocking, felting, knitting, beading and embroidery Also sourcing naturally produced in SA (linen, wool, silk) Philosophy: Desirable clothes in natural colours that seemingly come from the earth using natural and eco-dyes Eco- and ethical brand, not an organic brand	Clothing with a conscience, what you wrap around you is a reflection of your soul. Socially and environmentally responsible company committed to sustainability through material selection and approach to design and manufacture. Incorporating a certain measure of recycled material to a collection

2.3.3 Methods of data collection

As indicated by Gillham (2000:12-13) using multiple sources of data is necessary for reliability. Yin (2009:101-102) refers to six possible areas which can be used as sources of evidence, namely documentation, archival records, interviews, direct observations, participant observation and artefacts, and he tabulates each with regard to strengths and weaknesses. Multiple sources also allow for data triangulation (Yin, 2009:15-16). In this research project, the developed conceptual framework was used to obtain thick description through a multi-

[21] As per Sub-unit website

method approach, which included semi-structured interviews, analysis of documents and analysis of products, as presented in Table 2.2.

Table 2.2: Methods of data collection

Data collection method	**Target groups**	**Objective of data collection method and 0guidelines**
Semi-structured interviews	Management or owner	Product criteria Innovative use of resources Sourcing of components and supply chain (management) Manufacturing processes and cleaner production methods Eco-awareness and social awareness Knowing what you do Training Fair trade and labour practices Product lifecycle Finding the advantage Global versus local Innovative use of resources
	Designer or design team	Product criteria Innovative use of resources Sourcing of components and supply chain (management) Manufacturing processes and cleaner production methods Eco-awareness and social awareness Knowing what you do Training
Document analysis		Documentation that the unit discloses that could indicate how sustainable design strategies are implemented: - Design policies and guidelines relating to company's eco-vision and strategy - Supply chain management - Quality assurance documents Corroborate data which might lead to further interviews or further documents Reviewing media reports/articles
Product analysis		An appraisal of eco-fashion collections between January 2013 and December 2014. The time span included two winter and two summer collections for review. Collections were available from the company websites, media and retail outlets. Objective: - How policy or strategy manifests itself in the final product presented to the consumer - How this information is given through to consumer Achieved by: - Reviewing past collections and information given on websites - Viewing garment products (feel and look of collections) - Reviewing media reports/articles

For this research project semi-structured were held with the three sub-units. Babbie and Mouton (2003:289) suggest that interviewing in a qualitative study is a conversational interaction which has a general plan of inquiry. In this research, all interviews were done by the researcher and the conceptual framework was used as the base plan of inquiry. From here, probing questions allowed the researcher to gain more in-depth information. All interviews were transcribed verbatim by the researcher and provided additional guidance to selecting documents. Gillham (2000:42-43) mentions that documents assist the researcher to understand the wider context of the case. In this research undertaking, publicly available documents and documents provided by the sub-units were regarded as purposively selected documents. Gillham (2000:88-89) suggests that all evidence has potential value if it has bearing on the aim of the study. As the fashion industry comprises of physical products, is seemed logical to include products as part of the data collected. Purposively selected products were chosen to ascertain how the environmentally sustainable practices of each sub-unit aligned to the data obtained from the interviews and documents, in order to interpret the lived experience.

2.3.4 Analytical strategy and techniques

Of the five analytical techniques suggested by Yin (2009:136-160), pattern matching and explanation building were applied for this research endeavour. Pattern matching is applicable in descriptive case studies as long as the predicted variables are defined prior to data collection (Yin, 2009:137). In this project, the conceptual framework is considered as defining the variables to the research as it was used as a guide during the semi-structured interviews. Explanation building, a technique that specifically aids a model-building process, assisted in building new knowledge that emerged from the research (Yin, 2009:141). The analytical strategy applied was divided into three steps, namely organising the findings, data refinement, and emerging new knowledge. The selected research strategy was underpinned by an ethical approach to research practices, and is discussed in the next section.

2.4 ETHICS

In this section, research ethics are discussed in order to determine how an ethical approach was applied to the research. A researcher has the right to find the truth, but not at the expense of others (Babbie & Mouton, 2003:520). Ethical matters deal with morality, with doing right instead of wrong. Babbie and Mouton (2003:520-527) suggest five areas that a researcher should comply with, of which only three are of importance to this research. The two areas that

are not applicable to this study are, firstly, harming of participants and, secondly, deceiving with wrongful information. The applicable areas are discussed below, and an explanation for the application to the research is provided.

2.4.1 Voluntary participation

Social research often requires participants to reveal something of themselves and the research then reveals this information to others, usually strangers (Babbie & Mouton, 2003:521). Voluntary participation should thus be of paramount importance in any study involving people. For this purpose two sets of documents were developed for this research project.[22] The first set included an information leaflet and informed consent for company participation. The information leaflet included the following information:

i. A brief outline of the study.
ii. The requirements from the company were discussed.
iii. The potential benefits of the study were presented.
iv. The rights of the potential participants in the study were highlighted.
v. The confidentiality with regard to the company as well as anonymity to participants was explained.
vi. The potential risks of the study to the company were presented.
vii. The credibility of the researcher and contact information of supervisor, co-supervisor and institution of study were supplied.
viii. An indication of internal ethical approval by the institution was declared.

The informed consent for company participation included the following information:

i. Unit information with regard to address, contact details and email addresses.
ii. Confirmation for the unit's participation in the study.
iii. An indication of additional members of staff to be interviewed.
iv. An indication of company documents to be reviewed.
v. Consent given by the sub-unit to review collections.
vi. Consent given by the sub-unit to use company name.

The second set of documents mirrored the first set, but was intended for the individual participation of staff members who had been identified by the owner. Additional to the information leaflet, therefore, was a clause that specified that the owner gave permission, but also stressed anonymity. The individual participant consent letter only included name and signature. Examples of the two sets of documents are attached as Appendix A.

As this research entailed an investigation into specific companies (referred to as sub-units), voluntary participation had to be obtained on two levels. Firstly, the company had to agree to participate, and secondly, in the two larger units, individual participation, other than the owner,

[22] The ethics information documents are based on the ethics documents developed by Tshwane University of Technology, Tshwane, South Africa.

needed to be obtained. The process for obtaining participation was through initial agreement to participate in the study for proposal purposes, a formal agreement by the sub-unit to participate, and a formal agreement by individual members of the sub-unit to be interviewed. Merriam (2009:217) mentions that one of the strategies for credibility is to rule out the possibility of misrepresentation or misinterpretation by the researcher, and is referred to as 'respondent validation'. The research focussed on individual companies and their operations, and therefore each company owner was asked to verify the information (verbatim transcripts) obtained during the interviews.

2.4.2 Anonymity and confidentiality

Babbie and Mouton (2003:523) insist that the most important research ethical concern is the protection of identity. In this research project confidentiality was ensured in two ways. Firstly, sub-unit owners needed to declare in writing whether the name of the sub-unit could be disclosed or not, and, secondly, the names of each individual interviewed would remain confidential. Only unit 2 indicated that the company name could be used, therefore, for consistency, all units and all individual participants are allocated a code. Only the allocated codes are used in the research report. To adhere to the anonymity clause and align to ethical research practices with regard to citation and referencing, a 'code alignment' appendix (Appendix F) is provided.

2.4.3 Analysis and reporting

As a researcher it is assumed that one is aware of ethical research aspects with regard to participants, however, ethical behaviour undertakings towards one's colleagues and the research community are of equal importance (Babbie & Mouton, 2003:526-527). In this research all data, negative or positive, are treated as being equally important and findings were not manipulated to fit the study. Integrity and objectivity were the main aims throughout the research with regard to method of reporting. There was no falsification of data. The thesis was compiled according to the criteria as determined by Cape Peninsula University of Technology and the declaration made at the start of the report refers to ensuring that all sources are indicated correctly and honestly, that the document contains no plagiarism and that this report is the sole work of the author.

Any qualitative research undertaken must adhere to an academic approach that will ascertain the quality of the research. The next section therefore explores the approach with regard to the quality of the research applicable to this project.

2.5 STRATEGY FOR QUALITY OF RESEARCH

In this section, the quality of the research is discussed in order to explore the steps taken to ensure such quality. The research strategy applied in this research needs to represent a logical set of statements and thus should be measured by a set of logical tests that occur during preparation for the research or during the research (Yin, 2009:40-45). The four tests suggested by Yin (2009:40), namely construct validity, internal validity, external validity and reliability, can also be used as an indication of the quality of the research. According to Babbie and Mouton (2003:278) the terms used above are more aligned to quantitative studies and thus they suggest equivalent, qualitative research methods terms, as presented in Table 2.3.

Table 2.3: Criteria for quality of study
(based on Yin, 2009:41; Babbie & Mouton, 2003:276)

Term used in quantitative studies	Term used in qualitative studies	Case study tactic	Phase in the research where tactic occurs
Construct validity	Construct validity	Identifying correct operational measures	Proposal Data collection Composition
Internal validity	Credibility	Pattern matching Explanation building Engagement in the field Persistent observation Use of (various) methods of triangulation Data base Peer review Assessing intentionality of participants	Data analysis
External validity	Transferability	Using theory Thick description Selecting (sampling) of participants	Research strategy
Reliability	Dependability	Case study design strategy Case study database	Design of case study strategy Data collection Data analysis
Objectivity	Confirmability	Findings reflect focus of the research and not the bias of the researcher	Database Documenting evidence of process Data collection instruments developed Documenting analytical processes

Babbie and Mouton (2003:277) argue that a study cannot be assumed to be transferable if it is not credible, and cannot be assumed credible if it is not dependable. Yin (2009:41) does not use the word 'objectivity' as a separate construct, but, when compared to Babbie and Mouton (2003:278), this aligns to confirmability. Yin (2009) refers to this as principles two (case study database) and three (documenting the evidence of process) of data collection. Similarly, construct validity is not a term used by Babbie and Mouton (2003); however, Yin's explanation of construct validity is "…identifying correct operational measures for the concepts being

studied" (Yin, 2009:40). For this research, credibility, transferability, dependability and confirmability were used.

2.5.1 Construct validity and dependability

Construct validity and dependability for this research was established with a well-developed proposal, presented and approved at the relevant faculty research committees of Cape Peninsula University of Technology (CPUT). The proposal detailed the research strategy to be followed, the case study participants and the methods of data collection, and thus guided the study throughout. The research was supervised by two highly acclaimed academics whose guidance ensured that the research remained focussed through regular communication by means of reports email discussions and meetings.

2.5.2 Credibility

For this research credibility was ensured through the selected analytical strategy and analytical techniques. The analytical techniques applied in this research included the following:

i. An extensive survey of scholarship on the three identified areas of enquiry in order to understand the focus of the research, which led to the development of the conceptual framework.
ii. The development, expansion and refinement of the conceptual framework that guided data collection.[23]
iii. The multi-method approach to data collection, namely semi-structured interviews, documents and products, for data triangulation.
iv. The development of a research database with regard to participating units, document reviewed and products selected and reviewed.[24]
v. The development of templates, derived from the refined conceptual framework that guided data organisation and ensured consistency in data organisation.[25]
vi. Dr Thea Tselepis critically reviewed the data analysis. To enable her to do so she was provided with the following information:
    - All interview transcriptions.
    - Initial interview data organisation (28 documents).
    - Refined data organisation (21 documents).
    - Summary of the organised data (9 documents).
    - All the selected supportive documents for analysis.
    - Product analysis spreadsheets for each all supportive products for analysis.
    - Relevant chapters that informed data verification.

[23] Refer to Appendices B, C and D.
[24] Refer to Appendix E, F and H
[25] Refer to Appendix G.

vii. The development of a research database with regard to participating units, document reviewed and products selected and reviewed.[26]
viii. The researcher's prior publication in an accredited peer reviewed journal – Image and Text, and accredited peer reviewed conference proceedings, such as DEFSA and CUMULUS; on environmental sustainability in the fashion industry.

2.5.3 Transferability

The research strategy selected for this research ensured transferability through two approaches. The first approach refers to sample selection. The research strategy required a purposive sample selection, which allowed for a range of possible participating units. The second approach was to foster a thick description in data analysis through detailed engagement with, and reporting of data, which resulted in the emerging of new themes and the development of a model for environmental sustainability in fashion design praxis. The small sample is not representative of the South African fashion industry, but can be considered a snapshot of current practice.

2.5.4 Confirmability

Confirmability for the research study is imperative to ensure that the findings reflect the focus of the study. This was achieved by several practical means, which included an extensive database, documenting the research as it unfolded, and presenting the analysis and the findings to a critical reader. Appendices include:

i. The conceptual frameworks.
ii. An example of the data organisation.

2.6 SUMMARY AND DISCUSSIONS

In this chapter the research strategy applied in this research project was discussed, by firstly providing an overview of a qualitative research approach, which, secondly, provided the framework for the research design applied in this research project. The overview considered notable authors and included the reasoning for selecting a case study research design, and the principles that a case study research design consists of. These principles include conceptualisation and contextualisation, the role of conceptual frameworks in case study

[26] Refer to Table 6.5(a), Table 6.5(b) and Table 6.5(c).

research designs, the using of multiple sources and methods for data collection, and, considered analytical strategies for data analysis.

The general discussion of a case study research design presented in this chapter provided an overview as to how a case study research design was applied in this research, according to the identified principles of a case study research design. Conceptualisation and contextualisation for this research required a three-step approach, namely, a well develop proposal that provided a framework for the study and an extensive survey of scholarship that focussed on the four identified areas of interest. The survey of scholarship forms the basis for the development of the conceptual framework that informed data collection and analytical strategy. Multiple sources of data were used to allow for thick description. The data collection methods selected and applied included using multiple sources of data to aid triangulation, developing a case study database, and developing a comprehensive evidence of process.

An ethical approach to research was undertaken by ensuring voluntary participation, adhering to confidentiality of individual participation and ensuring an honest and true reflection in the reporting of the findings. The approach to ensuring quality of research included construct validity and dependability, credibility, transferability and confirmability. With the research strategy applied in this research established in this chapter, the following chapters explore the areas of scholarly inquiry identified as pertinent to this research. These include environmental sustainable design with regard to economic viability, environmentally sustainable design, environmentally sustainable fashion design praxis, and design thinking and design praxis.

CHAPTER 3

ENVIRONMENTAL SUSTAINABILITY:

AN OVERVIEW

…the best way to get people to take sustainability seriously is to frame it as it really is; not only as a challenge that will affect every aspect of management but, for first movers, a source of enormous competitive advantage.

Richard Locke, MIT
(Burns, Townend, Khayat, Balagopal, Reeves, Hopkins & Kruschwitz, 2009:10)

This chapter forms part of the survey of scholarship that provides a conceptual framework for the case study. The purpose of Chapter 3 is to establish a global view on environmental sustainability in relation to environmentally sustainable design praxis as suggested in Sub-question 1, Objective 1 and 2, and as presented in Figure 3.1.

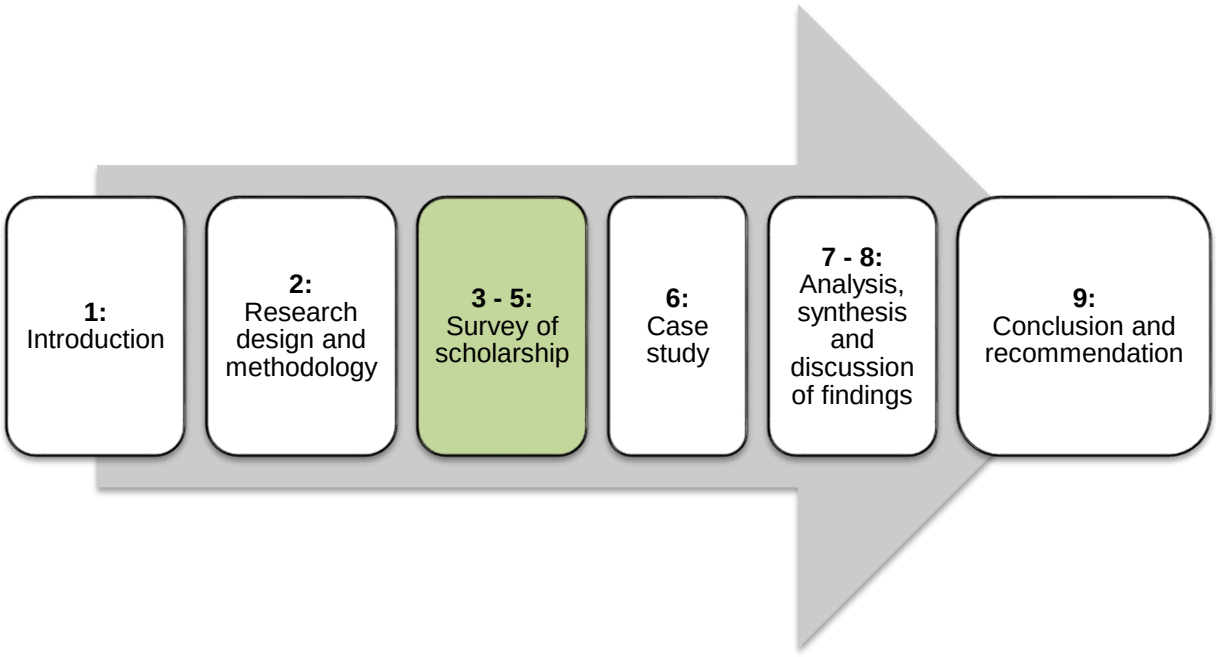


Figure 3.1: Schematic representation of case study – survey of scholarship, part one (developed by author)

Ehrenfeld (2008:197) declares that business is the largest employer and the major source of technological innovation by being focussed on innovation and change, yet is also indirectly the driver of much of the damage to the environment. Therefore, the strategy to be followed in Chapter 3 is two-fold. Firstly, it aims to obtain a broader perspective of environmental sustainability as viewed from a business perspective, which will be achieved by reviewing the work of prominent authors in business that make aconnection to design in some way. This section therefore explores environmental sustainability in the world of business, economic advantages that environmental sustainability poses, a business strategy for environmental sustainability and what role design has in the above. The second section of the chapter aims to establish a base of environmentally sustainable design by reviewing prominent authors in the field, it provides an overview of environmentally sustainable design praxis, and it reviews theoretical approaches to environmentally sustainable design. The survey of scholarship, of which Chapter 3 forms the first part, informed the development of the conceptual framework (objective five) used for data collection and the organisation of the data, the analysis, and the reporting of, and on the findings.

3.1 ENVIRONMENTAL SUSTAINABILITY: A BUSINESS PERSPECTIVE

In this section environmental sustainability as a business imperative is explored by discussing four specific themes in order to understand the importance of environmentally sustainable design in business. The first theme provides an overview of the importance of environmental sustainability in business, the second theme explores the economic advantages of environmental sustainability and the third theme discusses a business strategy for environmental sustainability. The last theme of this section investigates the role of design in developing environmental sustainability as seen from a business perspective.

3.1.1 An overview of environmental sustainability in the business world

The first sub-section provides a brief overview of environmental sustainability in the world of business, by exploring the 'environmental lens' that is referred to by business in order to develop an understanding of the importance of environmental sustainability from a business perspective. According to Brown (2006) the western economy is largely based in a throw-away culture but there seems to be a shift to a new approach to consumption. Brown (2006) and Esty and Winston (2009) refer to an 'environmental revolution', which is comparable to the preceding industrial and agricultural revolutions. Brown (2006:247) argues that the agricultural revolution dealt with restructuring the food economy and transforming the earth's surface through structured farming as opposed to the culture of hunting and gathering. The industrial revolution that followed centred on restructuring economic activity which led to the accessibility of product. For this to occur there was a need for increased use of energy, resulting in pollution. By these means and actions, the industrial revolution transformed the earth's atmosphere. Both of the above developments were driven by the need for new discoveries and by the use of technology. The environmental revolution, if it is to occur, needs enhanced technological development.

The current challenge is to find a balance between nature, man and the economy. The pressure for an environmental revolution presents significant challenges to the earth and its resources, which leads to constraints on business, and, therefore a re-alignment is necessary (Esty & Winston, 2009:8-9). According to Brown (2006:259) there is an awareness of the gravity of the current environmental situation and this should influence decisions. In future, generations cannot refer to a lack of understanding or lack of resources available, as there is a developing awareness of sustainable use of available resources and, as such, change needs to be instilled. The biggest challenge is to speed up change (Brown, 2006:259). The new economy, according to Brown (2006:227-228), is achievable by being honest and having an

honest market system based on ecological truths. This means that all costs, direct and indirect, need to be taken into consideration.

According to Esty and Winston (2009:3), companies that are taking the current environmental situation seriously do so by looking at their business through an environmental lens. According to these authors, companies that have been successful in applying environmental principles are deemed successful as they take advantage through strategic management of environmental challenges. An environmental lens therefore implies that the approaches to all business practices are linked and viewed through an environmental strategy and that this strategy is referred to as the one essential business strategy.

According to Ehrenfeld (2008:198-200) a business is responsible for increasing profits otherwise it will not stay in business, and business is therefore about generating money. For this it needs to attract a customer and then aim to keep him or her. The role of business therefore is to:

i. Provide equipment and the physical structure needed to generate products and services that can be sold.
ii. Provide employment. Labour is used in exchange for money and, to be able to receive the money, labour makes the products required to sell, or provides the services with which to do business.
iii. Create wealth for those who have invested in business.
iv. Provide a positive impact where the norms and beliefs that an employee observes at work have an effect of some kind elsewhere in her/his life.

The Sloan Report (Burns *et al.,* 2009:5) states that the underlying drivers of sustainability are highly complex.[27] According to Steve Fludder, vice president of Ecomagination (Burns *et al*., 2009:5) the world knows the value of environmental sustainability in business. He further argues that it is not a case of why environmental sustainability should be an integral component of business, but rather of how it should be part of business and to what extent it (environmental sustainability) equates to value. The report also highlights that there seems to be a strong consensus that sustainability matters, and that in whatever way one defines it, it is an essential issue and not merely a current topic. According to the report, a definition of sustainability is generally broad, but the emphasis should remain on the value chain. The report highlights

[27] The MIT Sloan report Management Review on the *Business of sustainability*, published in 2009, questioned business on whether sustainability would change the competitive landscape and reshape competitive opportunities, and how companies would capitalise on sustainability-driven changes. The survey consisted of three groups, one being 1500 corporate executives of companies that are at the cutting edge of sustainability, 50 thought-leaders whose companies are all engaged with, and at the cutting edge of sustainability and thirdly experts from a range of disciplines such as energy, science, civil engineering and management (Burns *et al.,* 2009:2).

three drivers for sustainability in business. The first is government, legislation and political security. The second is consumer concerns and the third, employee interest (Burns *et al.*, 2009:7). Should environmental sustainability be imperative in business, there should be advantages. The following sub-section explores these possible advantages.

3.1.2 Economic advantages of environmental sustainability

In order to understand what these advantages and, by implication, challenges are, this sub-section considers the second theme and explores what economic advantages business sees as imperative for successful acceptance and implementation of environmental sustainability as an integral part of the whole. Richard Locke from MIT (Burns *et al.,* 2009:10) argues that the best way to ensure that sustainability is deemed important is an open approach to the challenges it presents and the economic advantages it offers. One of the key conclusions mentioned in the Sloan report (Burns *et al.*, 2009:3-6) is that sustainability is having an impact on how companies think and act. The authors' report that companies with experience of integrating sustainability, approach sustainability from a very broad spectrum. These companies therefore consider environmental sustainability from an economic point of view and they acknowledge the importance of engaging with the suppliers across the value chain and therefore they hold suppliers to specific criteria related to environmental sustainability. The report identifies the following challenges and potential opportunities of sustainability (Burns *et al.*, 2009:10). The first is that it affects all aspects of a company's operations. Secondly, sustainability impacts value creation in the short term and long term, and thirdly, mounting pressure from stakeholders (corroborated by Esty & Winston, 2009) is increasingly important. The fourth challenge identified in the report is that there seems to be an emphasis on effective interdisciplinary collaboration, and lastly, decisions on sustainability are made against a backdrop of high uncertainty.

According to the report (Burns *et al.,* 2009:11) the barriers that impede the integration of sustainability are that people, in particular business leaders and managers, lack a common fact base. Companies often do not share a common language or definition when discussing sustainability and the goal they work towards is frequently not clearly defined or not collectively understood. Three challenges are therefore posed in the report. The first is that sustainability must be planned for both, short term and long term impact. The second challenge suggests that sustainability is intangible; therefore how its success is to be measured is integral. The third challenge is that sustainability needs to be implementable in an uncertain economic environment. The report (Burns *et al.,* 2009:15) highlights that companies that are deemed successful in implementing environmental sustainability, appear to define sustainability strategically and economically, adopt a system-wide view, and form partnerships. They create

a robust business case for sustainability and then apply it in the whole value chain, thus holistically integrating sustainability throughout the business.

Esty and Winston (2009) identified fifty companies (twenty-five American companies and twenty-five international companies) that they refer to as the 'WaveRiders'.[28] These companies have been able to show considerable progress towards operating with environmental sustainability and use environmental sustainability to establish an advantage over their competitors through strategic management of environmental challenges (Esty and Winston, 2009:15-18). The business landscapes within which these companies operate are driven by a number of aspects, from globalisation to the need to make use of local markets and respond to local market needs. In addition, meeting the expectations of society is increasingly important and business needs to concern itself with poverty alleviation, healthcare and education (Esty & Winston, 2009:16; Ehrenfeld, 2008:200-201). Transparency and accountability are constructs that have become integral in business and living alike, thus full accountability is becoming the norm (Esty & Winston, 2009:18). The authors (Esty & Winston, 2009:20-21) found that in WaveRider companies the interface between good business and environmentalism is embedded in environmental consideration in all aspects of their operations. This includes reducing environmental impact, determining their environmental footprint and generating profit.

The authors (Esty and Winston, 2009) list five aspects that the WaveRider companies have in common. The first aspect is that they design innovative products and are known for their innovation in design. The second aspect is that they place an emphasis on environmental stewardship with their suppliers, which relates to the third aspect which indicates that they collect data to track progress and determine performance in all operations. The fourth aspect that the WaveRider companies have in common is that they constantly seek solutions to processes that could harm environmental practices. The last aspect identified by Esty and Winston (2009) is that these companies build an eco-advantage culture within their business structures by providing tools, structure and training to empower all employees to aspire to the company's eco-vision.

Esty and Winston (2009) argue that the economy and the environment are deeply intertwined, and rank at the same level as other issues, such as globalisation. In this interconnected world "…environmental strategy emerges as a critical point of competitive differentiation" (Esty &

[28] The WaveRiders were compiled through available information; Esty and Winston (2009) first narrowed the list of 5,000 companies to 200, and then further narrowed the field to only fifty companies, which they refer to as WaveRiders. The methodology applied to develop the WaveRider list can be found in the book *Green to Gold* (2003:24-25). On the USA list, three textile and clothing companies appear (Du Pont, Nike and Patagonia) and none on the international list. These companies have a specific eco-mind-set (an environmental lens) that seems to be critical to managing eco-risks, driving innovation and turning environmental pressures into environmental advantages.

Winston, 2009:282). This requires that companies have a holistic vision of the entire company, its operations and its stakeholders, their way of thinking, adopting ways of understanding the company's environmental challenges and embedding environmental stewardship into their core values. Esty and Winston (2009:146-147,165) argue that the WaveRiders have an eco-advantage mind-set which contains the following and is seen as the 'eco-advantage bottom line'.

These companies have a broad view on all issues which influence everything; from investments to strategic decisions, to considering tangible aspects and intangible gains and to contemplating possibilities for adding value up-stream and down-stream. They view environmental sustainability from management firstly, thereby ensuring commitment from top to bottom in the organisation. A 'no is not an option' viewpoint is adopted, setting seemingly impossible tasks and refusing to accept failure. Some companies refer to this as the TINA approach ('There Is No Alternative'). These companies recognise that feelings are facts, thereby considering all stakeholders' opinions regarding the company's environmental performance. Therefore they believe in doing the right thing, basing environmental decisions on core values for short term and long term benefits.

The above necessitates that companies need to take ownership of a sustainability approach. A compelling example is DuPont,[29] who has in previous years had structured Environmental Leadership Committees, but has moved to a Sustainable Growth Council which is led by the chairman. This approach places ownership of environmental sustainability and environmental thinking at the core of the company and reduces the need for a top-down approach. Making the environment a key part of performance reviews is an interesting view and sends a unequivocal message to all employees (Esty & Winston, 2009: 219-223). It is clear that environmental sustainability is a necessary business approach with specific advantages and challenges and it requires a strategy for successful implementation.

3.1.3 A business strategy for environmental sustainability

Sub-section three discusses the third theme, namely business strategies for implementing environmentally sustainable practices, by reviewing Ehrenfeld's (2008) holistic approach and the elements he deems imperative in environmental sustainability, and Esty and Winston's (2009) strategy framework.

[29] Du Pont manufactures textiles and apparel, with a focus on protection. An apparel and textile brand name associated with DuPont is Teflon®, which provides a protection to the textile that increases abrasion resistance, resistance to soiling and increases durability (DuPont, n.d.).

3.1.3.1 Ehrenfeld's strategy

Ehrenfeld (2008:6-7) refers to 'flourishing', which is central to his definition of sustainability, where a concept of *being* takes precedence over *having.* According to Ehrenfeld (2008), most of what is achieved on behalf of sustainable development very often merely reduces unsustainability and perpetuates having. He (Ehrenfeld, 2008:20; 46) argues against looking at improving sustainability from the same modernist perspective that created unsustainability, as unsustainability is not caused just by increased consumption but by addictive patterns underlying consumption. Trying to solve unsustainability by using less energy and fewer materials and components in the manufacturing of a product, although correct, is a temporary solution. Ehrenfeld (2008: 58-60) mentions that flourishing happens in what he refers to as the "Tao of Sustainability" consisting of three domains (as illustrated in Figure 3.2):

- Human – our sense of being
- Natural – our place in the world
- Ethical – doing the right thing

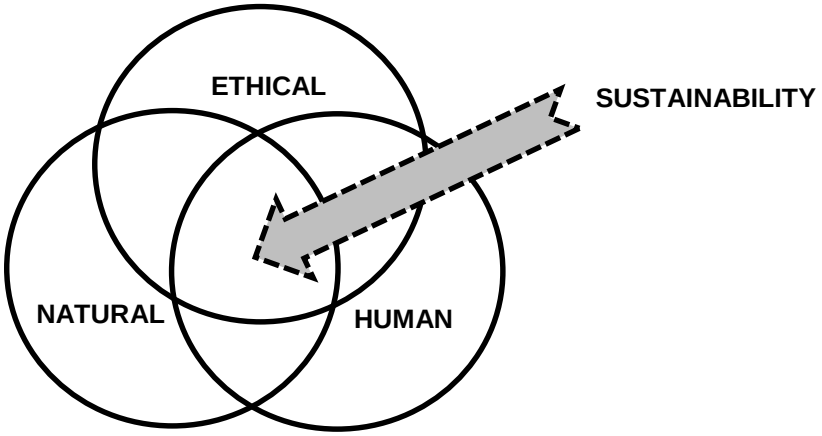


Figure 3.2: Ehrenfeld's 'Tao of sustainability'
(Ehrenfeld, 2008:59)

According to the author, sustainability can emerge if the three domains are addressed simultaneously. Therefore, considering only nature or consumption or taking responsibility for one's actions will result in a temporary solution. Sustainability, a human existence problem, is then an "…emergent property of a complex system; we can observe it only if all the relationships on which it depends are functioning correctly" (Enrenfeld, 2008:59). Ehrenfeld (2008:203) suggests 'the human' to be the most important of the three domains and argues that:

> Without a restoration of human care for the world, we are probably stuck with an unending succession of quick fixes. And without recovering the ethical dimension, sustainability will always be someone [else's] responsibility and job.

Business, therefore, needs to embody sustainable culture characteristics, as indicated in Table 3.1, below. The letters 'n' and 'b' refer to the source of inspiration, when n=nature and b=being.

Table 3.1: Characteristics of a sustainable culture
(Ehrenfeld, 2008:178, 203)

Cognitive	Worldview	Contemporary norms	Psychological
Interconnected (n)	Holistic (n)	Equity/justice (b)	Remembrance (b)
Distance (b)	Organic (n)	Qualitative (n)	Affirmation (b)
Complexity (n)	Bio-centric (b)	Enchantment (n,b)	International (b)
Indeterminacy (n)	Intuitive (b)	Other-directness (b)	Accurateness (b)
Graduality (n)	Communitarian (b,n)	Techno-scepticism (n)	Sensitisation (b)

Another aspect that Ehrenfeld (2008:207) refers to is 'industrial ecology', which is based on the idea that human economic systems can become more efficient when mimicking living ecosystems. This is particularly of interest when looking at systems of sustainability, recycling and re-use and speaks to networking and industrial symbioses, where the one feeds off or into the other. The take-back programme of Patagonia is a good example.[30] Ecosystems also imply holism, an important construct in Ehrenfeld's theory.

3.1.3.2 Esty and Winston's strategy

Esty and Winston (2009:101-121) developed a strategy framework from a purely economic perspective. Their approach is based on short term aspects such as costs of materials, energy used and time. According to the authors (Esty & Winston, 2009:102):

> Companies that successfully manage environmental risks lower operating costs, reduce the cost of capital, drive up stock market valuations and keep insurance premiums reasonable. They also avoid the indirect costs of business interruption and lost goodwill.

Most companies focus on reducing costs, but their research on the WaveRider companies showed the importance of all the areas indicated above. Figure 3.3 is the schematic representation of Esty and Winston's (2009) strategic framework.

[30] The Patagonia model is discussed in Chapter 1, under section 1.3.3.

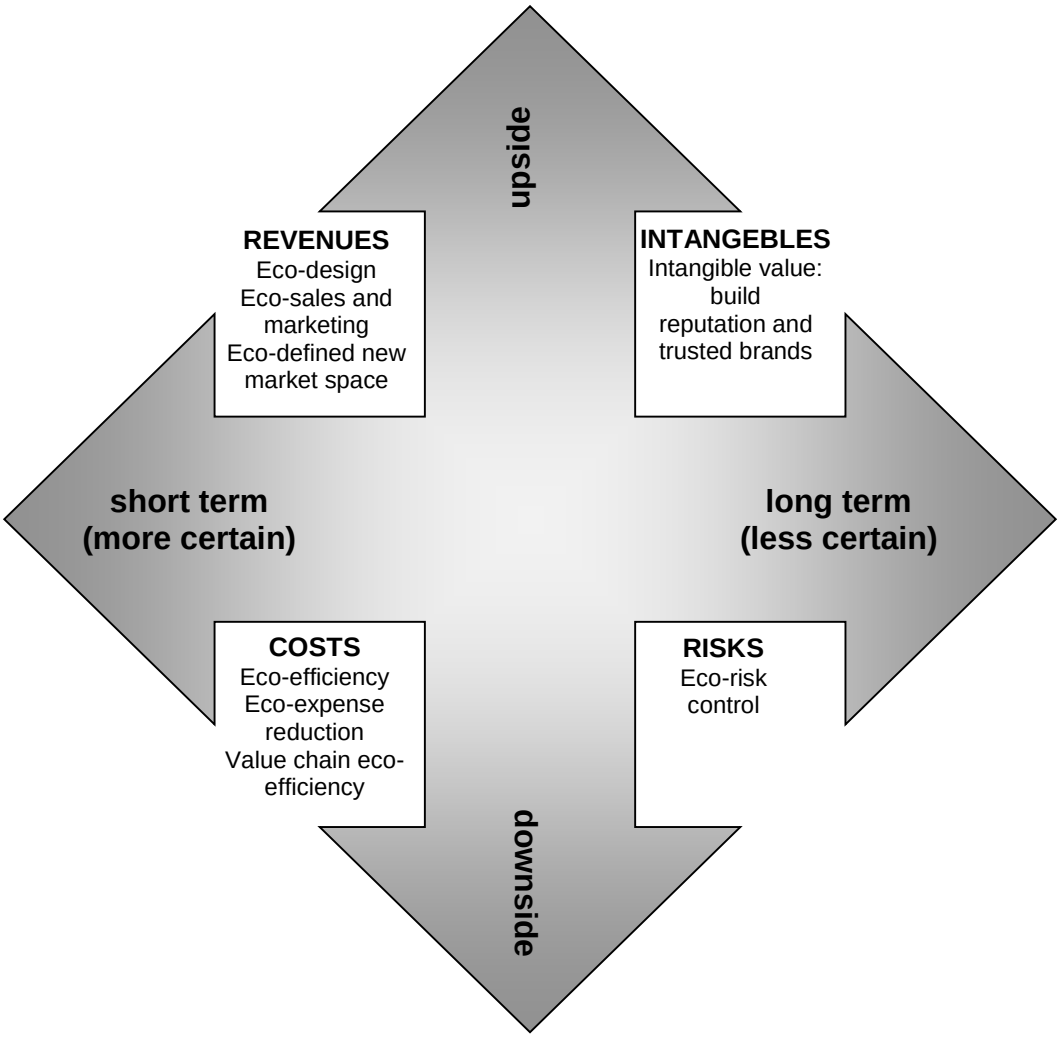


Figure 3.3: Strategy framework – business perspective
(Esty & Winston, 2009:295)

Esty and Winston (2009) view the above as a strategy for building eco-advantage. In general, competitive advantage is created by lowering costs and by differentiating the product produced or the service delivered. To translate this into developing an eco-advantage, they use a strategy framework and divide the strategy into two areas, building the upside and managing the downside.

Four areas are considered for managing the downside. The first is improving resource (water, energy, material) productivity and reducing waste, which can lead to cost effectiveness and can create an advantage over the competitor. The second is reducing, controlling and managing eco-expenses. The third is lowering costs within the value chain, by engaging with suppliers, and the fourth is managing environmentally driven risk, which refers to anticipatory issues management (finding the risk before it finds you) where thorough auditing becomes an important aspect. According to Esty and Winston (2009), the imperative for finding an eco-advantage in business is to go beyond compliance.

Building the upside involves four steps. The first step refers to design (Esty & Winston, 2009:124) and involves incorporating not only consumer needs, but consumer environmental needs, when developing a product. This entails considering the lifecycle of the product, therefore looking at the processes before and after product development. One of the pertinent aspects, according to Esty and Winston (2009:74), is the directive on registration, evaluation and authorisation of chemicals (known as REACH), a restructuring of Europe's approach to environmentalism.[31] The above should happen within a cost-framework that is acceptable to the producer and delivers a cost comparative product to the market. The second aspect relates to brand positioning and refers to communication to consumers, through marketing strategies and efforts (Esty & Winston, 2009:130). An interesting example is the Timberland shoe box that displays a carbon footprint label similar to a food label that displays nutritional content, to inform the consumer. The third aspect refers to an eco-defined market space and relates to value innovation, thus developing a product around the constraints posed by sustainable environmental production (Esty & Winston, 2009:134). In addition, the authors refer to 'servicing' as a construct and relate this to recasting a product as a service. The fourth aspect refers to corporate and brand reputation, an intangible notion, but, as the authors mention, in a celebrity-oriented world, brand matters (Esty & Winston, 2009:135-140). Companies need to protect corporate reputation and build brand trust, which could lead to competitive differentiation. What is revealed about the product, how much is revealed about the product or what is not revealed about the product become critical decisions.

According to Esty and Winston (2009:202,264), redesigning and greening the supply chain is an important aspect to consider, in other words, where the components come from (product), what is in them (content) and how they are made (process). Audit programmes are crucial in this regard. Examples of auditing processes are Life Cycle Assessment (LCA) or AUDIO,[32] and become tools to establish an eco-advantage. These tools and auditing systems assist to view the company and its operations through an environmental lens and create awareness of challenges and opportunities. Esty and Winston (2009:236-252) suggest thirteen prominent flawed approaches, as depicted in Table 3.2:

[31] Registration, Evaluation, Authorisation of Chemicals (REACH), is a European Union directive that requires that manufacturing proves that the chemicals used are *safe*, a new approach from the old that required manufacturing to prove that a chemical was unsafe, thus basing REACH on the precautionary principle. Esty and Winston refer to the use of asbestos as a good example (Esty & Winston, 2009:50).

[32] Esty and Winston refer to AUDIO as a tool to manage complexity. AUDIO refers to: *aspects* which influence business; considering the *upstream* (back value chain) and *downstream* (forward value stream) and how these affect suppliers and customers; what challenges or *issues* develop from environmental problems and lastly, what *opportunities* to building profit and eco-advantage exist (2009:61-64).

Table 3.2: Where it went wrong
(based on Esty & Winston, 2009)

FAILURE	WHY IT IS A FAILURE
Seeing the tree but not the forest	Failing often occurs when one has ignored the big concerns in the value chain (the authors refer to it as extended producer responsibility). Looking at the trees and not the forest needs to translate into commitment and then into action.
Misunderstanding the market.	Companies often have a narrow focus and concentrate solely on their own issues, and not consider the market.
Expecting a price premium	Selling products on their greenness alone will not suffice – quality, price and service still remain crucial. An example is Patagonia, which produces green products made from organic materials and recycled fibres. The company would not retain their market share if their quality was not at an acceptable standard. Image alone is not enough to allow for sustainability, thus green products cannot command a higher price simply by claiming greenness. Consumers see money in the pocket as a higher imperative than future savings. This is the opposite of what a 'green' business needs to do.
Misunderstand customers	What one economic community feels is important is not necessarily applicable in another community (country). Knowing and understanding the customer is often an aspect overlooked in the design process.
Asking too much of specific management levels	Not providing the correct training nor incentivising a sustainable environmental approach and implementation.
Not seeing the bigger picture and working in isolation	Only finding a solution to the issue or problem at hand, or only considering the current problem (looking at the tree and not the forest). Important to remember here is the strategy of Design for the Environment (DfE) and consideration of the value chain. Here design plays an important role in thinking of preventative measures.
Taking an eco-isolating approach as opposed to an eco-integrated approach	What is needed is to bring eco-thinking and strategies and implementation deep into the core of the business. Eco solutions cannot be decided fast, they need more thought and this requires top-level commitment and integration.
Making premature promises	In the eagerness to be green, one fails to take action and can be accused of 'green-washing'.
The uninvited consequence	Not being prepared for uninvited consequences. Even with the best intentions and most thorough research, one can overlook a detail that could become a costly error.
Perfect is the enemy of good	Sustainability depends on long-term economic success. A good idea is not necessary a good solution. No business is sustainable if it pursues environmental purity without sound business practice.
Inertia and inactivity	Often the most difficult thing to do, is to move people into a different frame of thinking. This requires clear vision, reachable goals and do-able and rewarded actions.
Ignoring stakeholders	This includes engaging with those that are favourable as well as those that are critical of the environmental footprint, and is based on sound and thorough research.
Not telling the story	Being honest. This goes hand in hand with green marketing. To the broader community and stakeholders (outward) the communication needs to be in clear, analytical terms.

A comprehensive, human-centred and economically feasible strategy is necessary when advantages for environmental sustainability are explored; as Esty and Winston (2009:245) explain:

> Design for the environment is like quitting smoking and eating right. It's preventative medicine for environmental problems. It can't eliminate every risk, but incorporating environmental consideration into product design goes a long way.

3.1.4 The role of design - a business perspective

Theme four of this section considers the role of design as viewed by business, by exploring the works of the same authors used in the previous sections, in order to comprehend their perception of the role of design. It is useful to start with a purpose statement of the importance of design in environmental sustainability. The Kyoto Design Declaration states that: "Design is a means to create social, cultural, industrial and economic values by merging humanities, science, technology and the arts" (Sotamaa, 2009:51). The declaration underpins the imperative for design(ers) to assume a new role, taking cognisance of the fact that ecological and social problems can offer opportunity for design(ers) to provide solutions leading to a sustainable new future.

Esty and Winston (2009:13) argue that design (or re-design) forms an important part in developing an eco-advantage. Ehrenfeld (2008:76) concurs and indicates that design is the only possible way (he uses the word *deliberate*) out of an unsustainable situation, dominating and addictive patterns, and social behaviour. He (Ehrenfeld, 2008:208) mentions that design is often based on need and functionality only and leads to the current situation of a technologically consumer-driven culture. This is not what the role of design should be. Esty and Winston (2009:196) agree that design is critical, as so much of the environmental impact a product has is determined at the design stage. The authors (Esty & Winston 2009:195-205) suggest a focus on new priorities as presented in Figure 3.4. The top section of the pyramid is based on McDonough and Braungart (2002) cradle-to-cradle approach, the lower section of the pyramid suggests that companies should explore ways to re-imagine and re-design what they do and how they do it, through innovative business practices.

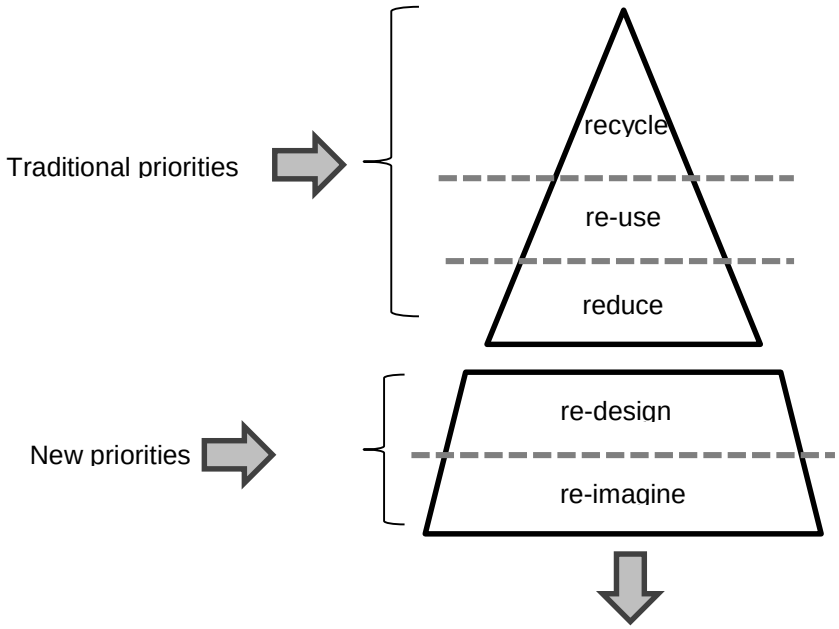


Figure 3.4: Pollution prevention hierarchy
(Esty & Winston, 2009:197)

A number of possibilities could be considered. One such suggestion is Design for the Environment (DfE), where environmental thinking is the starting point of product development combined with value chain thinking, as discussed by Esty and Winston (2009:245-246). A second suggestion is industrial symbioses, that is, the 'closed loops' that are visible in nature. An example of this type of practice is recapturing resources to reduce carbon footprint and lower resource costs. A third suggestion involves re-designing and re-imagining spaces that are used by incorporating eco-design in buildings occupied. The fourth suggestion is re-designing and greening the supply chain. Thorough audit programmes can assist in ensuring that strategies for sustainability are implemented. A fifth suggestion is an integrated approach, where aspects are not viewed in isolation but where environmental thinking is core to the business, backed by CEO planning and enthusiasm and strengthened by employee commitment and implementation.

Another position is presented by Thorpe (2010:5), who argues that the idea of economic growth equates to growth in well-being. Continuous increase in growth assumes continuous increase in well-being, with the result that the challenge for environmental strategies and policy is to meet consumer demand in a more environmentally friendly manner. But is this informed-choice, as presented to the consumer, sufficient, and does the consumer have the subsequent knowledge regarding the impact of consumption on the environment? Thorpe (2010) states that it is possible that the improved status of people (moving from poverty to middle class, as in China) has increased productivity and demand, yet it is debatable if the improved status has

had a positive effect. She mentions that the consumer is an independent (sovereign) identity and does not necessarily 'vote' with her/his wallet, but is generally heavily influenced by advertising. Thorpe (2010:6) argues that it is notable that the consumers do not consider themselves as citizens and therefore 'greener' options are often not supported. So instead of consumers making an independent decision, it is necessary that 'choice editing' occurs.[33]

Thorpe (2010:7) refers to choice editing that assumes that the consumer wants to make good choices, but because of habit, economic constraints or other limitations, cannot do so. Therefore, choice editing attempts to ensure the right decision is factored into the product selected by the consumer. Thorpe (2010:8) indicates that most debates focus on how design is seen as the heart of the problem and suggests that design for behavioural choice could be a new approach to consider. Design for behavioural choice incorporates informed choice – where the consumer is given the information that could drive the buying decision, such as the information on the Timberland shoe box mentioned earlier. In addition design can add elements to the product that guide consumer behaviour on how to use the product effectively.

Companies such as Nike are trying to find new models to address the environmental sustainability in a holistic manner. One of these is 'lean manufacturing'; another initiative is to constructively engage with the suppliers.[34] Since Nike was subject to strong criticism in the 1990s, the company has been focussing on compliance and social responsibility (which include ethical labour practices), reducing waste and use of harmful components (such as solvents), implementing innovative recycling processes and developing high-end technology products. This can have an impact: Mary DeLong (DeLong, 2009) Director of Innovation at Nike, mentions that Nike sells clothing and footwear in approximately 25 000 stores across America and in 150 countries world-wide. Nike has roughly 600 supplier factories spread in 50 countries in the world which employ approximately one million workers (Chhabara, 2010:19).

Adidas, another global trader that has over 1,100 factories in 68 countries, is partnering with their suppliers in order to develop a mutual understanding and develop policy and necessary management systems to address social and environmental issues (Chhabara, 2010:16). According to Adidas, merely policing suppliers is not the answer as this only addresses the current concern and does not consider the root cause. The above alludes to a collaborative approach – sustainability cannot be viewed separately from ethics. The SA8000 and Worldwide Responsible Accredited Production (WRAP) is a certification system that can assist

[33] Choice editing stems from behavioural economics and is in contrast with the consumer making an informed choice. Choice editing thus could ensure that sustainable options are the norm (Thorpe, 2010:6-7).

[34] 'Lean manufacturing' is often referred to as 'smart manufacturing' and refers to energy efficiency and favourable working conditions (Chhabara, 2010:15).

with corrective action and continued improvement. According to Chhabara (2010), such an approach is creating ethical supply chains by working together and establishing relationships.

The main authors (Esty & Winston, 2009; Ehrenfeld, 2008; Burns *et al.,* 2009) in this section clearly indicate that environmental sustainability should be the focus of business and all indicate that a holistic approach to environmental sustainability is required. Their conclusion is that the manner in which companies approach and implement environmental sustainability is where the economic advantage lies. Successful companies engage with sustainability through managing suppliers, establishing economic feasibility, engaging with stakeholders, reviewing practices and tracking performances in a local and global playing field and indicate that design is one of the key drivers. The above ties into Ehrenfeld's (2008) notion of 'flourishing' and the importance of being instead of having, an approach to environmental sustainability that centres on people, nature and ethics.[35] The eco-advantage strategy that Esty and Winston (2009) propose supports Ehrenfeld's worldview in that it approaches environmental sustainability from a holistic point of view and refers to building the upside and managing the downside simultaneously.

The business authors support the notion of eco-design theorists such as Thakara (2006) who argues that environmental impact is determined at the design stage, as suggested in Figure 3.4, and names a number of possible strategies such as 'closed loops' or 'design for sustainability (DfS)'. The holistic approach is taken further by Thorpe (2010) who considers environmental sustainability from a marketing perspective. She agrees with the above authors that design is a key role-player and refers to design for behavioural choice, a notion that supports Ehrenfeld's 'Tao of sustainability'. The above examples of Nike, Timberland and Adidas seem to support the argument that design is important. To what extent does design have input or influence environmentally sustainable business strategies? A deeper understanding of what environmentally sustainable design praxis is, is therefore the next topic of discussion.

3.2 ENVIRONMENTALLY SUSTAINABLE DESIGN PRAXIS: AN OVERVIEW

In this section a broader perspective of sustainable design is explored by looking at environmentally sustainable design from two perspectives. The first perspective discusses theoretical constructs informing environmental design thinking. The second perspective

[35] This relates to Ehrenfeld's 'Tao of sustainability' (2008:59).

explores sustainable environmental design by looking at design processes, the end result and the designer. Wahl and Baxter (2008:82) suggest:

> Sustainability is an emergent property of appropriate interactions and relationships among active participants in the complex cultural, social and ecological processes that constitute life in the twenty-first century.

3.2.1 Theoretical constructs informing environmental sustainability in design thinking

A number of theoretical constructs are discussed in this sub-section in order to develop an understanding of design from a broader perspective. The sub-section is divided into three themes. The first theme discusses aspects that underpin environmentally sustainable design. The second theme looks at approaches to environmentally sustainable design, and in the last theme the consumer is considered with regard to environmentally sustainable design. The work of Buchanan, Doorden and Margolin (2010), Wahl and Baxter (2008), Fuad-Luke (2009) and Fisk (2010) inform the discussion.

3.2.1.1 Spiral dynamics, interdisciplinarity and meta-design

The first theme is this sub-section reviews the work of Wahl and Baxter (2008) in order to consider aspects that underpin environmentally sustainable design. Wahl and Baxter (2008:73) mention that, on the one hand, design as product is an expression of intentional materiality.[36] On the other hand, the "…immaterial dimension [meta-design]1 of a person's conscious awareness, value systems, worldviews and aspirations defines the intentionality behind the materialised design" (Wahl & Baxter, 2008:73). Here meta-design refers to the nature of things in relation to how one views the world and one's involvement in complex ecological, cultural and social processes. Therefore, design making that holds value, asks of designers to consider insights generated by a wide range of perspectives and disciplines.

According to Wahl and Baxter (2008:74) changes in values, worldviews and aspirations could lead to changes in intentionality and lifestyle and are necessary for a sustainable human civilization. Yet this is only possible, according to the authors, if design and designers are open to contributions from diverse disciplines and perspectives, and it requires individual and collective participation between all stakeholders. Wahl and Baxter (2008: 75) state that to establish a sustainable presence of sustainability in the world is the most complex design problem for design in the 21st century. These real world problems require that one does not

[36] Materiality is the intention (fit for purpose) of the design, and is expressed through the relationship one has with the product. Immateriality is how one makes sense of the product according to one's own worldviews and value systems (Wahl & Baxter, 2008:73).

isolate the product (of design) from its context, and thus calls for integrated and flexible design solutions. In order to fully understand the challenge, designers will have to 'step back to see the bigger picture' through, as the authors suggest, trans-disciplinary design thinking. Wahl and Baxter (2008:75) argue that:

> …integrative and trans-disciplinary design thinking can ensure that our choices are conscious and well-informed by a holistic and integral perspective rather than hastily forced and based on the limited perspective of a limited discipline.

This broader knowledge approach can lead to inclusive decision making to create more sustainable solutions, but is only possible by mediation between the perspectives of different stakeholders. The authors refer to the above as 'trans-disciplinary dialogue', with the intention of the dialogue being to understand what it means to sustain and explore the prospect of enhancing sustainability (Wahl & Baxter, 2008:76-77). In order to do so, one needs to understand how different value systems and worldviews affect one's design solutions and how, according to Wahl and Baxter (2008:77), material and immaterial design decisions create the culture in which one lives. What is more, the above needs to happen in all spheres simultaneously and cooperatively – local, regional and global. To understand the values Wahl and Baxter (2008:77-82) refer to, the Graves' model of spiral dynamics is discussed. Clare Graves provided a dynamic map of the development stages of human consciousness, value systems and worldviews. Beck and Cowen, former research associates of Graves, further developed the model to the current spiral structure consisting of levels, as illustrated in Figure 3.5. The spiral is significant in that each upwards tier is a development of what already exists and provides a unifying framework that makes holistic thinking and actions possible.[37] Each tier represents vMEMEs (value memes) and these, according Wahl and Baxter (2008:77-79), can be understood as patterns of meta-design that determine the why, what and how one designs.[38] Currently eight vMEMEs have been described and it is possible to be in several places on the spiral at the same time.

[37] Spiral dynamics is a development from Maslow's hierarchy of needs. Where in the latter the focus was on the needs of self, the spiral dynamics model moves between the need of self and the needs of the collective (Gilbert, 2010:5).

[38] Fuad-Luke refers to vMEME's as units of information and units of cultural transmission that explicitly and implicitly guide behaviour" (Fuad-Luke, 2009:36).

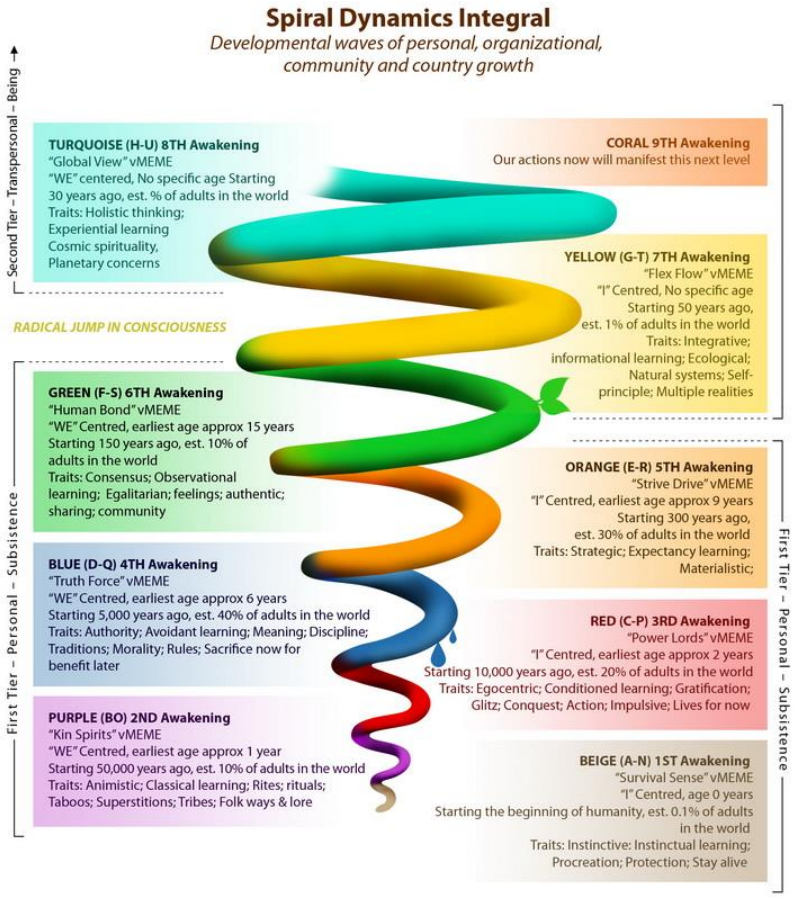


Figure 3.5: Spiral dynamics – the Gravesean model adapted by Saxby (Saxby, 2009:1)

Beck and Cowen's adaption of the Gravesean model "…offers a unifying [tool] that makes genuinely holistic thinking and actions possible" (Wahl & Baxter, 2008:78). Wahl and Baxter use the idea of vMEMEs to make certain value systems and thinking more intelligible. All levels of the Graves model form part of human psychological expression and decision-making. In the adapted Graves model as seen in Figure 3.5, personal/subsistence (sixth awakening – first tier), is based in relativism and relates to well-being and the sensitive-self. According to Wahl and Baxter (2008), the second tier (the being level) is based in a systemic (interactive processes) and holistic (global structures) approach. The authors (Wahl & Baxter, 2008:80) state that design based on second tier thinking could result in improved, conscious and responsible design, aimed at the creation of healthy societies and environments. Conversely, not considering the materiality and immateriality could lead to bad design. Although their article focuses on trans-disciplinary integration and collaboration, and the designer's role within this, they feel that spiral dynamics offers an informative point of departure for designers working towards sustainable eco-design. They mention that: "Sustainability is an emergent of appropriate interactions and relationships among active participants in the complex cultural, social, and ecological processes that constitute life" (Wahl & Baxter, 2008:82). Applying spiral dynamics and trans-disciplinary dialogue between stakeholders creates a process that links

functions, people and *ideas* into more natural flows that "…add precision, flexibility, rapid response and humanity…" to the process.

Wahl and Baxter (2008) argue that sustainable development is "…a community-based process of co-evolution and learning that involves design decisions informed by a holistic/integral perspective" (Wahl & Baxter, 2008:83). Fuad-Luke concurs and mentions that design has played a central role as mediator of cultural acceptability and it can therefore provide regulatory service production and consumption (Fuad-Luke, 2009:36). He views design as pre-configured course and where these pre-configurations can be interpreted as vMEMEs, where design "…simultaneously confers meaning and value and affirms the dominant paradigm" (Fuad-Luke, 2009:36).

Fuad-Luke (2009:5-6) suggests that activism today is the collective thought of like-minded people who are involved in inculcating change by transforming from state A to state B, who work on a number of social capitals to elicit change or transformation. Bhamra and Lofthouse (2007:25-27) and Fuad-Luke (2009:6-8) allude to five capitals (as shown in Table 3.3a) namely, natural, human, social, manufactured and financial.

Table 3.3(a): Capitals for change or transformation – the usual five
(based on Fuad-Luke, 2009:6-8 & Bhamra and Lofthouse, 2007:25-27)

CAPTAL	DESCRIPTION	RELEVANCE TO DESIGN AND SUSTAINABILITY
NATURAL	Natural capital is from the natural world - any stock or flow of energy or matter that yields goods or services. Natural capital refers to *natural resources*; renewable (timber) and non- renewable (fossil fuel), *sinks* recycling and neutralising wastes; *processes* for example, climate regulation	Risk for over-exploitation of natural resources or our unwillingness to measure and/or value these. Relates to use of energy, natural resources and should be considered the core of sustainability
HUMAN	Human capital is what is needed for productive functioning and how it can be enhanced: health/physical, knowledge/intellectual, psychological skills and dexterity. These include emotional and spiritual capabilities. Enhancement can be achieved for example, through education.	Human capital is essential if we want to encourage holistic view and Ehrenfeld's being/flourishing.

SOCIAL	Social capital refers to structures or institutions that enable individuals to develop. Value added to any activity or economic processes by human relationships and cooperation. Fuad-Luke (2009:7) mentions 'bridging social capital is inclusive as it is outward looking and tries to join people from different social groups' around shared beliefs and values.	Two subdivisions: institutional capital and cultural capital, which have considerable influence to deliver positive growth and reduce negative impact.
MANUFACTURED	Manufactured capital refers to material or man-made goods needed (thus infrastructure) that become enablers and contribute to produce but are not part of the output, for example: buildings, equipment, infrastructure. This is also referred to as 'infrastructural capital'.	This also includes waste, disposal of waste, use and development of technology.
FINANCIAL	Financial capital is the representative value of the above four capitals by reflecting their productive power. Financial capital is governed by markets and institutions that are social networks and where transactions take place based on norms and trust.	Sustainability should be the framework on/within which this is based.

Fuad-Luke adds three more capitals (as shown in Table 3.3b) namely, man-made, cultural and symbolic.

Table 3.3(b): Capitals for change or transformation – the necessary three
(based on Fuad-Luke, 2009:6-8 & Bhamra and Lofthouse, 2007:25-27)

MAN-MADE GOODS	Natural capital that is converted by manufactured capital making use of financial and human capital; our economy of today.	Design is primarily situated here and this is where sustainable consumption and production is argued/developed in.
CULTURAL	Bourdieu in the 1970's develop three manifestations: *Embodied state* – cultural (inherited/acquired set of properties) capital is held by the individual, part of human capital and verified by social capital. *Objectified state* – the goods we as individuals buy, these goods have financial and symbolic capital and are made from the man-made goods capital. *Institutionalised state* – recognises the cultural capital the individual has achieved (thought an academic qualification) in order to achieve, for example financial value. Individuals moving thought these various states decide what holds value and what not.	Design is integral to cultural capital.
SYMBOLIC	This recognises the sociological state of the individual within his/her social groups/units. Symbols confer meaning and value, and therefore status. These meanings/values that are held personally or collectively, can change over time.	Sustainable design speaks to individual and collective values. Sustainable consumption patterns can be influenced.

Table 3.3b presents associated capitals or, as Fuad-Luke (2009:6) describes it, 'other' capitals, around which societal and political change pivot, and where design is embedded.

3.2.1.2 Approaches to implementing environmentally sustainable design

The second theme is this sub-section reviews the work of Fuad-Luke (2009) and Bhamra and Lofthouse (2007) in order to consider approaches that underpin implementation of environmentally sustainable design. Fuad-Luke (2009:23) suggests "Sustainability is grounded in ecological praxis and systems thinking. It challenges the capitalist thinking of production and consumption that assumes unlimited growth".

Design, although specific to a discipline (industrial design, jewellery design, fashion design, for example), operates within certain frameworks that are applicable to any design discipline (Fuad-Luke, 2009:20-24). One of these frameworks could be environmental sustainability, the concept which could bring or bind design into any discipline. He specifically refers to sustainability as the meta-challenge. According to Fuad-Luke (2009:23), the concept of sustainability has many definitions that are fairly flexible, depending on the field of study and

the context in which the definition is used. Typical characteristics of design refer to the triple bottom line (TBL) of balancing profit (economic issues), people (social issues) and planet (environmental issues). Fuad-Luke (2009:20-25) differentiates between *eco-design*, *sustainable design* and *design for sustainability* and equates the three concepts with the three eco-agendas tabled since the Earth Summit in 2000. He subsequently develops three models to explain these concepts. Concept one – as illustrated in Figure 3.6 – *eco-design*, consisting of economic viability and ecological stability, results in ecologically-efficient design.

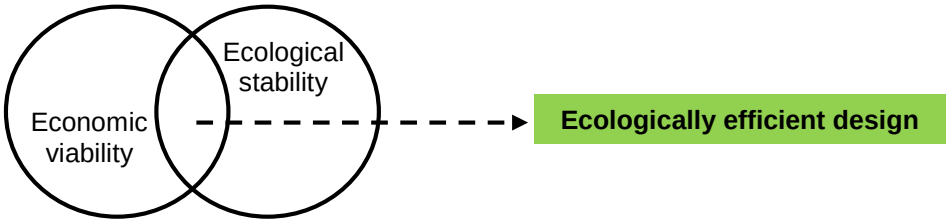


Figure 3.6: Eco-efficiency Agenda
(Fuad-Luke, 2009:25).

Eco-efficiency, as explained by Bhamra and Lofthouse (2007:27) is a "…philosophy that encourages business to search for environmental improvements…" within economic viability. Efficiency makes good business sense; eco-efficiency does the same. Eco-efficiency is sometimes also referred to as eco-effectiveness, which places emphasis on innovation and not mere efficient use of resources and processes. Innovation, they argue, is what is needed to achieve real improvements and to change behaviours. According to Bhamra and Lofthouse (2007:28) eco-efficiency is based on three objectives, as explained in Table 3.4.

Table 3.4: Eco-efficiency
(based on Bhamra & Lofthouse, 2007:28)

REDUCE CONSUMPTION	Reduce the consumption of natural resources, for example, water, energy. It is also based on efficient use of natural resources, for example, land Enhancing recyclability Enhancing product durability
REDUCE IMPACT	Minimising air emissions Effective waste disposal Considering alternatives, for example, renewable energy
INCREASING VALUE	Better service through product functionality Focusing on functionality, need, whilst flourishing Selling the service and not merely the product

The second concept, *sustainable design*, relates to the triple bottom line (TBL). Bhamra and Lofthouse (2007:21-25) refer to this as 'sustainable development'. The TBL consists of economic and ecological stability and social equity, the emphasis being on the symbiosis between the three aspects. Economic stability is basic accounting procedure, which shows after the deduction of costs and depreciation. Environmental stability revolves around consideration for the environment and consumption of resources. As Bhamra and Lofthouse

(2007:15) argue, human society cannot function without nature. Social equity revolves around the effect on social, ethical and political issues relating to the environment in a broader sense. Thus, the nouns used in Fuad-Luke's second model, as shown in Figure 3.7, are eco-efficiency, access and sharing.

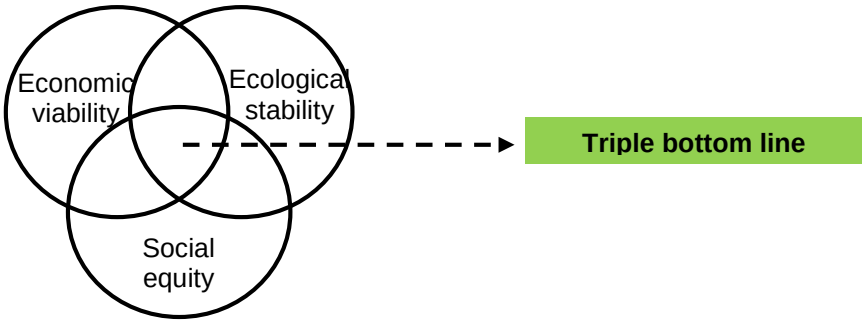


Figure 3.7: Triple-bottom-line Agenda
(Fuad-Luke, 2009:25).

In *design for sustainability*, the third concept, Fuad-Luke combines ecological stability, economic viability and social equity in a triangle in the following model (Figure 3.8).

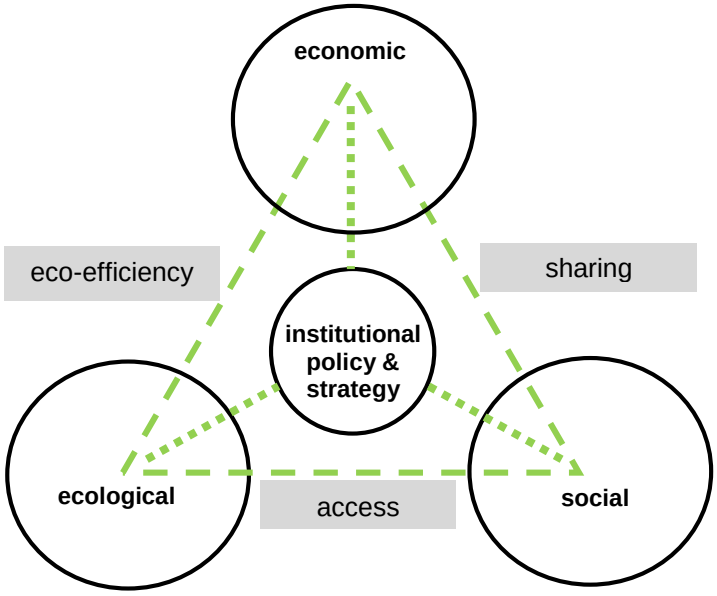


Figure 3.8: Sustainability Agenda
(Fuad-Luke, 2009:25).

Fuad-Luke (2009) refers to the model, illustrated in Figure 3.8, as the "sustainability prism". He combines social equity, economic viability and ecological stability, and adds institutional policy and strategy. He refers to the sustainability prism as the foundation for design-led activism, as he describes it. According to Fuad-Luke (2009:20-24), many design approaches already address contemporary issues and acknowledge sustainability as the meta-challenge. He lists

twenty-six but only thirteen that have an obvious link to fashion design, are highlighted here and listed alphabetically, as depicted in Table 3.5.

Table 3.5: Approaches to sustainable design
(Fuad-Luke, 2009:20-21)

Design approach/ Framework	Typical characteristics	Key contemporary issues
Conceptual	Speculative future scenarios	Cultural and social transformation
Critical	Speculative design proposals, provocation, intervention	Cultural and social critique
Design management and planning	Processes to implement or plan design within a business or organisational context	Any contemporary issues
Eco	Issues related to the environmental and sustainability impacts of design	Environment, sustainability
Environmental	Framework that encourages reciprocal relationships between the design object (within a micro- or macro scale) with natural systems	Environmental, sustainability
Experience design	Designing human experiences foremost and processes, products and services that deliver that experience.	Economic, cultural, social
Green	Considers issues of the environmental impacts of design	Environment, sustainability
Meta-design	Design that designs itself, within the whole, in order to redefine and synergise social and technical infrastructures collaboratively and co-adaptively.	Cultural, social – participation and democracy
Participatory	A collaborative approach to the design of products, services, spaces or systems that involves actors/stakeholders in the design process	Cultural, social, political – participations and democracy
Re-work	Refining, improving or interpreting an already existing functional design	Economic, environmental, cultural (consumerism)
Slow	An approach that encourages a slower, more considered and reflective process, with the goal of positive well-being for individuals, societies, environments and economies	Any contemporary issues
Strategic	An approach levering maximum competitive advantage to business or organisations by using design at a strategic level of operation or management	Economics, corporate social responsibility (social and/or environmental)
Sustainable design	Design to deliver sustainable development and deliver the 'triple bottom line' by balancing people, planet, profit	Balancing economic, ecological and social consideration

According to Fuad-Luke (2009), sustainability could be seen as the meta-challenge, as it is "…grounded in ecological praxis and systems thinking. It [sustainability] challenges the capitalist systems of production and consumption that assumes unlimited growth" (2009:23).

Wahl and Baxter (2008:73) mention that design can be defined (broadly) as 'the intentionality interactions and relationship", the processes of development of product and the immaterial dimensions that relate to value, consciousness and aspirations (the intentionality behind the materialised design). They define meta-design as the "…onto-epistemological assumptions we employ to define ourselves, and to make sense of experiencing our participatory involvement in complex ecological, cultural and social processes" (Wahl & Baxter, 2008:74). Therefore, what one designs represents the nature of things in relation to how one views the world. They further state that changes in dominant worldviews and value systems lead to changes in intentionality and lifestyles (a meta-challenge) and "…meta-design induced changes are catalytic in the transition towards a sustainable human civilisation" (Wahl & Baxter, 2008:74). Design, which fundamentally is worldview dependant, can therefore envision and create, through a meta-design worldview, a sustainable future (Wahl & Baxter, 2008:75).

3.2.1.3 Environmentally sustainable design and the consumer

The third theme is this sub-section reviews the work of several authors in order to consider approaches that underpin environmentally sustainable design and the consumer.

Chapman and Gant (2007:3) argue that humans, willingly or not, increasingly separate themselves from nature and natural systems, turning nature into the 'other' – an object for possible consideration. In fact, in their current lifestyle, they perceive nature as an opposing force that needs to be controlled, and tend not to see the interrelations and linkages that are all part of a sustainable perception. Chapman and Gant (2007:6-7) suggest that current systems of consumption of many resources are unsustainable, and technological change is a key issue for sustainability and design, creating opportunities for co-design and participatory design practices.

Fisk (2010:78-84) states that sustainability might be the only way towards the survival of the earth's resources, but to most consumers this is still optional, and they will only do what they want to do. Unconsciously, the consumer also might not be making the right choice, due to lack of knowledge or information. Fisk (2010) provides a table that is based on Maslow's pyramid of needs and divides these into three categories: essentials, enablers and energizers, as shown in Figure 3.9.

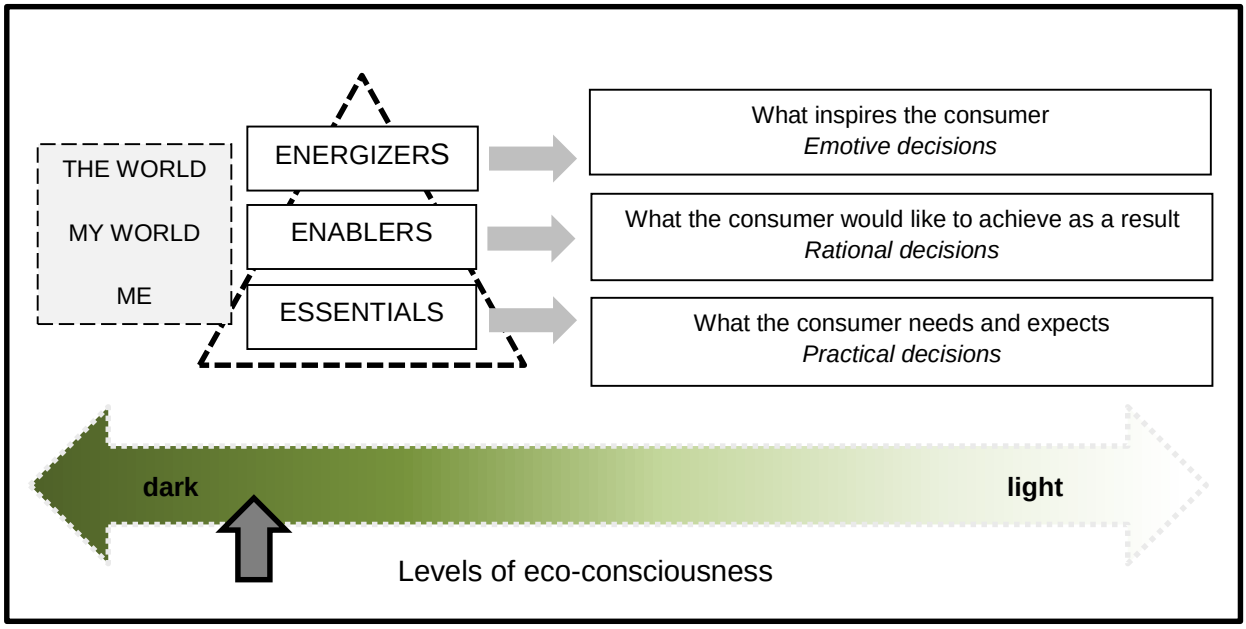


Figure 3.9: Consumer and nature
(based on Fisk, 2010:78-84)

In Figure 3.9, the relationship the consumer has with the world is important, because it starts with personal issues such as health, education and happiness. 'My world' refers to issues directly surrounding the self and gradually spirals outward to family, friends and community. 'The world' relates to global concerns such as poverty, ethics and the environment, and the manner in which people are motivated is shaped by this. Fisk (2010:80-86) further explains how consumers can be categorised into 'shades of green' which indicates their level of consciousness of environmental issues.[39] On the figure this is indicated as ranging from dark green (the very conscious consumer) to almost no green (almost no concern in/from the consumer). There might even still be 'white' consumers in this regard. Fisk (2010) mentions that consumers can slide across the scale of greenness based on personal preferences in particular situations, and that consumers constantly make trade-offs between functionality and sustainability, and very seldom show consistency in their greenness.

Wood (2007:97-112) states that professional designers dream on behalf of the consumer, but that although the world is changing, many designers unwittingly helped (or are still helping) to create a society of "…pampered individuals who believe they have the inalienable right to possess anything they purchase with their own money and then have the right to discard it in any way they choose" (Wood, 2007:101). This is even more evident in the purchase of clothing (fashion). At the time Wood (2007) wrote this, he felt design still bowed to commercial pressures and few designers worked towards a common environmentalist agenda, which he referred to as meta-design. According to Wood (2007:101-103), meta-design requires a shift

[39] Fisk (2010:82-86) refers to several research companies that have completed research about this topic, namely, Blue Sky, Green Sky Thinking, landor.com, Hartman-group.com, yankelwich.com, nmisolutions.com.

from normative planning (how things ought to be) to a humanistic enterprise of seeding (how things might be). The shift therefore is from design as planning to design as seeding. Because of this, design becomes more extensive and less discipline based.[40]

Ehrenfeld's notions of 'having' and 'being' have been discussed in a very simplistic way above, whereas, in fact, it is a very complex discussion. Ehrenfeld (2008:101-139) himself warns that to define 'having' and 'being' is dangerous. Enhrenfeld (2008:110) mentions 'having' as the familiar way of living in which an individual is entirely tied up with possessing. 'I am what I own and what I have defines me'; therefore modern consumerism is a form of 'having'. In this regard 'having' is not necessarily the evil here, because, as Ehrenfeld explains, one can also 'have' knowledge. 'Being' is an experience of acting and connectedness. It is almost as if he is saying: 'you need to have to be able to be (and being is a step towards sustainability) and if so – you can flourish'.

3.3 SUMMARY AND DISCUSSION

The purpose of Chapter 2 was two-fold, firstly, to explore environmental sustainability in business, and therefore, the first section of the chapter aimed to obtain a broader perspective on environmental sustainability as viewed from a business perspective. The economic advantages that environmental sustainability potentially presents, as well as the role of design as advantage for environmental sustainability, were considered as possible business strategies for the implementation of environmental sustainability as business praxis. The challenge of environmental sustainability for business is to find the balance between man's needs, nature's deliverability and good business practices. Therefore, to develop economic advantages, environmental sustainability needs to be planned and needs to be measurable in order to see the value. It must embody the TINA approach – there just simply is no alternative. Forming partnerships, being transparent and accountable seem to be important drivers, and design plays an integral part in developing eco-advantages.

Exploring environmental sustainability in design, was the second purpose for Chapter 3, and provided an overview of environmentally sustainable design praxis. Wahl and Baxter (2008:73) mention that immaterial dimensions of an individual's awareness, the worldview, values and aspirations, inform the intention behind the design. It is precisely these worldviews that could lead to changes in lifestyle and meaning and they are thus necessary for environmental sustainability. As one cannot isolate design from its context, integrated approaches and solutions are needed. Well-informed design solutions, taken from a holistic perspective, need

[40] The construct *design as seeding* is used by Fuad-Luke (2012) as well, and implies that design can be used in co-design efforts involving the consumer.

to be considered instead of hasty decisions and actions that merely maintain unsustainable process and behaviour.

Aspects identified in the first part of the survey of scholarshipsurvey of scholarship, with regard to business strategies for implementing environmental sustainability and environmentally sustainable design praxis, were used to inform the development of the conceptual framework for this research project, which, in turn informed data collection, analysis and ordering of the findings. Having established an understanding of environmental design praxis in broader terms, the following chapter focusses on fashion design praxis in relation to environmental sustainability.

CHAPTER 4

ENVIRONMENTAL SUSTAINABILITY IN THE FASHION INDUSTRY: A QUESTION OF COMPROMISE

> Do we build a product that is so durable and long lasting that you never have to replace it? Or do we build products that disintegrate after a reasonable number of wears, so there is no landfill? Or do we create a product that self-cleans itself, so you preserve water resources? What is the best fiber to use – recycled polyester or organic cotton? How do we solve the problem of sustainability without compromising the athlete's performance? Do we build products that can be totally recycled? How do you dismantle a product – do you make products with dissolvable thread? There are many, many different opinions and conversations about what can be sustainable.
>
> (DeLong, 2009:112)

The purpose of the chapter is to achieve Objective 3 of the research study and answers the first part of Sub-question 2. As with Chapter 3, this chapter forms part of the survey of scholarship that provides a conceptual framework for the case study, as presented in Figure 4.1.

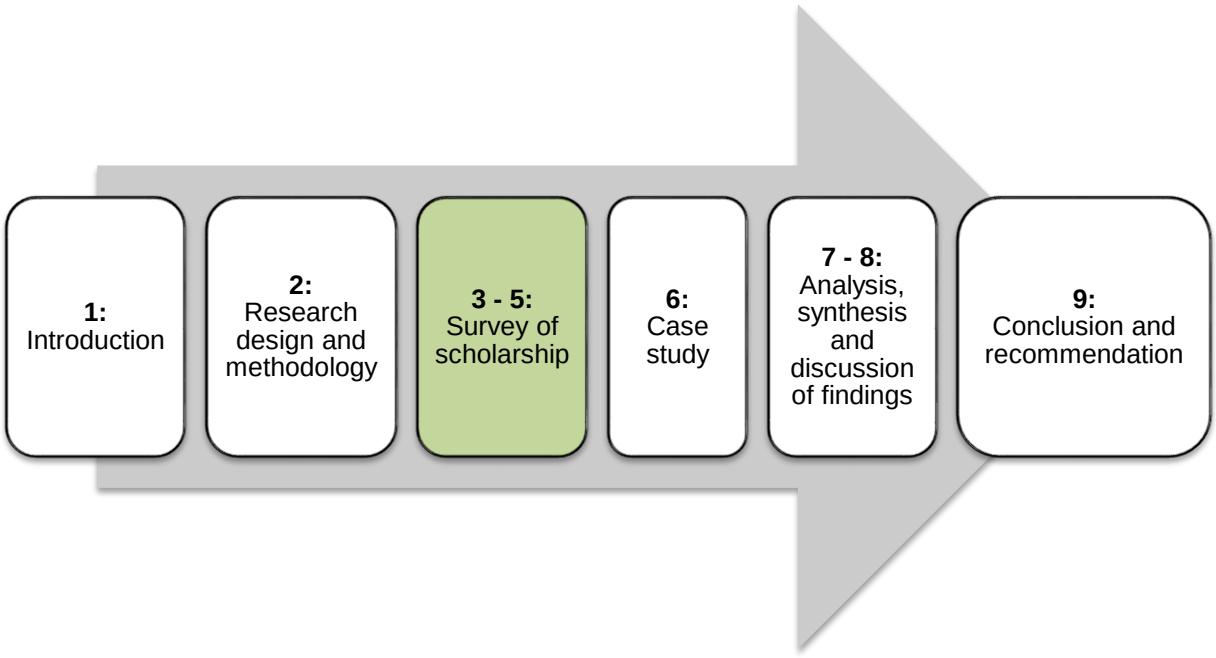


Figure 4.1: Schematic representation of case study – survey of scholarship, part two (developed by author)

The aim of this chapter is therefore to explore environmental sustainability in the fashion industry, as presented in objective three, by reviewing selected texts in order to provide a broader platform from which to understand environmental sustainability within the entire fashion system. The strategy to be followed is a survey of scholarly work. It is impossible to provide a comprehensive overview of all areas of the fashion system where environmental sustainability in the fashion industry could be implemented. However, this chapter is an attempt to provide some representative examples of how environmental sustainability could be applied.

Based on how Buchannon and Margolin (1995) define design (as a broader discipline), design as (product} planning is an activity that is practiced by professionals, of which the result can be shaped by an analytical approach to method. Design, as product, is evident of values that have been instilled in it. Highmore (2009) agrees with this explanation but adds process to the definition. He mentions that the process results in either a product or an active sense of moulding and shaping the world in which one lives. Walker, as mentioned by Armstrong and LeHew (2011:30), suggests that fashion is a passing trend and actually refers to fashion as a ‘fad’, something that is “…transient, superficial and often wasteful”. He suggests that fashion is the opposite of long-lived and therefore is an impediment to sustainability. In addition to the above, Black (2010:256) argues that, in order for environmentally sustainable fashion to be

sustainable; it needs to satisfy the consumers' symbolic needs, while simultaneously transforming their relationship with clothes.

Total environmental sustainability in any fashion product is not possible, and thus, as the title reflects, in this chapter the focus is to establish where compromise occurs, in order to determine where and how environmental sustainability can be applied. Environmentally sustainable fashion design is therefore a process of compromised choices. The intention in this chapter is to explore fashion design praxis by reviewing its processes, from developing fibre to the disposal of the product.

There are not many scholars who have written on environmental sustainability and fashion design, therefore, the work of Kate Fletcher is used extensively in this chapter. Fletcher is a notable author in the discourse on fashion design and has either authored or co-authored several texts on environmentally sustainable fashion design. Her latest book, co-authored with Lynda Grose and titled *Fashion and sustainability: design for change,* is a recent comprehensive discussion of current environmental sustainability in the fashion industry.[41] Black (2011:22-23) describes Lynda Grose as a "…passionate eco-campaigner".[42] Grose was the knitwear designer for Esprit in the 1990s, and was the designer responsible for Esprit's first eco-collection, showcased in 1992. The collection, based on ethical principles, was developed from the premise of maximizing product lifecycle through innovative design and construction, minimizing (or eliminating) the use of man-made fibres, minimizing cradle-to-grave concepts, and, through working with organic components, encouraging environmentally sustainable farming. Esprit's eco-collection eventually stopped in 1995. Since then, Grose has worked with Patagonia, designs, teaches and is involved with developing local production in Peru (Black, 2011:22-23). Fletcher and Grose's work in this chapter is supported by authors such as Black (2010; 2011), DeLong (2009), Hethorn and Ulasewicz (2008), Armstrong and LeHew (2011), and Clark (2008).

The chapter starts by presenting an overview of the life cycle of a fashion product and then explores each aspect of the lifecycle. The lifecycle is divided into five areas, namely, developing fibres into textiles, developing products, retail of products, use of the products by the consumer, and the disposal of the products. The chapter ends with a summary and discussion.

[41] Other texts authored by Fletcher, and referred to in this study, are *Slow Fashion – an invitation for systems change* (2010); *Sustainable fashion & textiles: design journeys* (2008); Clothes that connect. In Chapman & Grant (eds), *Designers, visionaries and other stories* (2007).

[42] Sandy Black is a professor in Fashion and Textile Design and Technology, at the London College of Fashion, University of the Arts, London.

4.1 THE LIFE CYCLE OF A FASHION PRODUCT

In order to comprehend the complexity of the fashion industry, the entire life cycle of a fashion product is reviewed in this section. The industry consists of a long and fragmented supply chain that feeds into design, manufacturing, buying and distribution pipelines, which very often operate in a global arena (Smal, 2014). Black (2010:252-253) reiterates that it is becoming increasingly important for the designer to influence decision-making because fashion as a global business can have components produced in several parts of the world along the stages of the supply chain. The supply, manufacturing and distribution chain is best visualised in Figure 4.2.

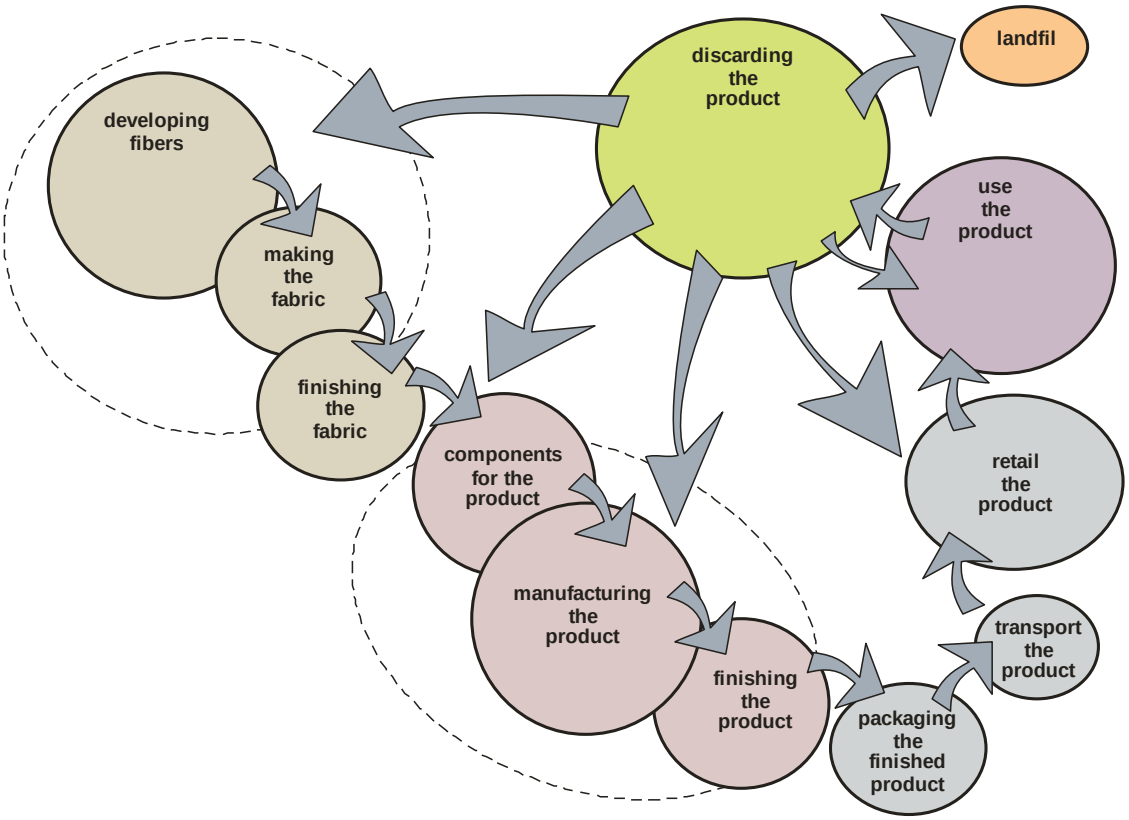


Figure 4.2: A view of the total lifecycle of a garment product
(image developed by author)

It is the complexity of the industry that becomes problematic when discussing environmental sustainability. Increasing demand and heightened consumer expectations have led to greater production of clothing, very often resulting in cheaper clothing that lasts for shorter periods (termed ‘disposable clothing’ as it might only be worn a few times) and higher consumption and, as Black (2010) suggests, a devaluation of clothing. This ‘fast fashion’ has consumers returning for new styles more often and perpetuates the faster production cycle.

According to Black (2010:253), increased environmental awareness and a demand for transparency in the development and production of products has grown. Environmental and

ethical issues arise at each stage mentioned in the figure above. Black (2010) places most of the processes presented in Figure 4.2, under the banner of the pre-consumer phase. Furthermore, in the lifecycle of a product use, laundering, disposal and processes undertaken by a consumer can be grouped as the post-consumer phase. The environmental impact of all of these processes needs to be considered and transparency is a key issue in this. Black (2010:257) also refers to establishing new partnerships between producers and consumers.

Environmentally sustainable fashion can only be implemented by people knowledgeable in the design and manufacturing field and in design development which, as suggested by Hethorn and Ulasewicz (2008), starts with an integrated approach. Almost all notable works from authors in the discipline of fashion design agree that fashion design and fashion designers are the key decision makers in the development of clothing that is environmentally sound. If one explores the world of sustainable fashion design and environmentally friendly fashion products, the complex nature of this discipline becomes apparent (Fletcher & Grose, 2012).

In order to apply an environmentally sustainable design strategy and understand the role of design there-in, the entire process, from fibre to disposal, as portrayed in Figure 4.2, is divided into five smaller clusters (sub-sections), and the possible impact on implementing an environmentally sustainable approach is explained in a narrative. The five clusters highlight possibilities that are implemented in practice currently. All materials impact on sustainability in some way, but it is what is hoped to be achieved with regard to environmental sustainability that results in a complex set of trade-offs, as suggested by Fletcher and Grose, (2012:13), in order to develop an optimally environmentally sustainable fashion product. The authors group possible environmentally sustainable strategies into four areas, namely:

1. Developing renewable source material such as renewable fibres.
2. Using resources, such as water and energy effectively, minimising chemical impact and lowering carbon footprint.
3. Taking fair labour practices and conditions of textile and product development into consideration.
4. Reducing waste and considering the lifecycle of the product at the product development stage.

All four of the above areas inform each of the clusters referred to below.

4.2 FROM FIBER TO TEXTILE

This section discusses the making and developing of the textile by looking at the impact of environmentally sustainable strategies from fibre development through to fabric development

in order to determine where environmental sustainability can be applied. As the start of any product is with the development of fibres, the first part of the narrative places emphasis on where fibres originate and the development of textiles, as presented in Figure 4.3.

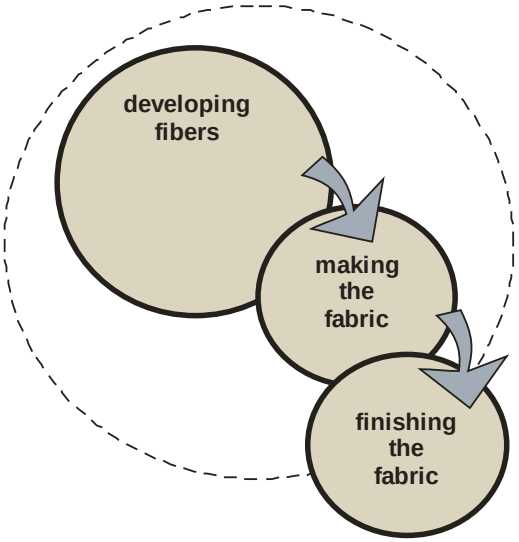


Figure 4.3: Focus: fibre to fabric
(image developed by author)

4.2.1 Fibre development

In this sub-section fibre development is discussed by considering how the different fibres all have positive environmental qualities and (can) pose negative effects on the natural environment. Depending on the type of fabric required and the cost thereof, certain compromises regarding fibre composition of a fabric need to be made. Thus, to meet specific fabric criteria, certain approaches to environmental sustainability are considered.

Fibres can be divided into natural and manufactured fibres. Natural fibres are further divided into two areas, namely fibres derived from mineral, animal or vegetable origin, of which cotton is the most common. Bast fibres, such as hemp, jute and ramie, and bamboo are also developed from vegetable origins.[43] Animal fibres are derived from silk, as well as hair (wool, cashmere, mohair). Natural fibres can be organically developed, which means that these fibres are cultivated and harvested without the use of chemicals or fertilisers and can therefore be considered environmentally friendly and safer for the work force. Manufactured compounds used in the development of fibres can be grouped into natural polymers that have vegetable origins and are cellulose based (viscose and bamboo viscose), and synthetic polymers (poly-

[43] Bast fibres are made from the stems of plants. This process is time and labour intensive and thus of a higher price. Examples of bast fibres are flax, hemp and ramie (Elsasser, 2005:46).

compounds) such as polyester and nylon. Table 4.1 is a schematic representation of textile fibre types.

Table 4.1: Textile fibre types
(based on Fletcher & Grose, 2012:15)

Textile fibres	Natural fibres	Vegetable		**Vegetable** Hair, Cotton
				Bast fibres Flax, Hemp, Ramie, Natural bamboo
				Hard fibres Coconut
		Animal		**Wool & Hair** Wool, Mohair, Alpaca, Cashmere
				Silks Natural silk Tussah silk
		Mineral		**Asbestos**
	Manufactured fibres	Natural polymers	Vegetable	**Cellulosic fibres** Viscose (including bamboo viscose), Lyocell
				Sucrose-based plyesters Polylactic acid
				Alginate fibres Acetate
				Elastodiene (rubber)
			Animal and vegetable origin	**Regenerated protein fibres** Casein (milk), Soy bean, Crab shell
		Natural polymers Synthetic polymers		**Triexta fibres** Polytrimethylene teraphthalate (PTT)
		Synthetic polymers		**Polycondensate fibre** Polyamide, Polyester
				Polymer fibre Polyethylene, Polypropylene, Acrylic
				Polyaddition fibre Polyurethane, Elastothane

Fibres are spun into yarns, which in turn are woven, knitted or bonded into cloth and finished in a particular manner. Environmental sustainability is considered in the components that are derived, developed or generated to develop the cloth and the processes of forming and finishing the cloth into a useable textile.[44] Sustainable strategies focus on the effect of the above on the environment, the worker and the end user, as well as the effective use of resources. To merely classify the above into natural fibres being 'good' and manufactured fibres being 'bad' is an simplistic approach as the classification does not necessarily reflect on positive renewability of fibres or the conditions under which they were created (Fletcher & Grose, 2012:14-15). Several environmentally sustainable approaches can be considered,

[44] 'Cloth' is generally referred to as an unfinished textile, whereas a 'textile' is a product ready to be used for producing a garment.

namely renewability, biodegradability, people-friendly, low-chemical use, low-resource use and predator–friendly.

When considering **renewability** as opposed to using non-renewable virgin fibres, bamboo is a good example. Bamboo grows fast and therefore it can be assumed that renewability of the fibre is good, yet the processing of the cellulose from which the fibre is developed requires high-impact waste emissions of water and air. Fletcher and Grose (2012:14) argue that what is needed is an "…extended view of responsibility, one where rapid regeneration of a fibre's source material is pursued not in isolation, but as part of a bigger strategy of safe and resourceful production…".Therefore, even if one considers using renewable fibres, low-impact renewable fibres that are generated with the least damage caused, need to take preference.

Fletcher and Grose (2012:17-20) refer to **biodegradability** as an outcome that is designed into the product, and mention that it is a proactive and an eco-system inspired response to environmental sustainability in this industry. Biodegradability of all components needs to be considered. Some carbon-based manufactured fibres cannot be broken down and fabric often consists of several fibre types (for example, a cotton and polyester blend). Fibres can be divided into three classes of biodegradability namely, biodegradable fibres that meet minimum standards for decomposition, non-degradable fibres that do not break down and degradable fibres that will decompose within a certain timeframe. Products (garments) consist of several components. A fusible compound is used to strengthen the collar area, and closure methods (buttons, zips – often referred to as 'trims') are added to enable the wearer to get into the garment. Trims have a significant ecological impact on the garment (Fletcher & Grose, 2012:52).

People-friendly fibres and products ensure that during harvesting, manufacturing or finishing, the conditions of the labour force are taken into consideration. Safety, better working conditions, responsible business models and global trading practices are aspects that inform this approach. Fairtrade, a global certification system, is a much criticised example. Due to globalisation, connections within supply chains are lost and designers and manufacturers do not know how, by whom and in which conditions the product is produced (Fletcher & Grose, 2012:20-22).

Another approach is **low-chemical use** in the development of fibres, fabrics and the finishing of products. In the growing of cotton, half of the chemicals sprayed on crops are classified as hazardous by the World Health Organisation (Fletcher & Grose, 2012:22; Black, 2011:113). Minney (2011) explains that some of the pesticides used in conventional cotton growing use organophosphates, a nerve agent, as well as at least three pesticides banned by the United

Nations Environmental Programme (UNEP).[45] The chemicals used on the crops never leave the fibre and therefore a product made with cotton could pose a potential risk to the wearer. Opposing measures could include growing and using of organic cotton, genetically modified cotton, non-genetically modified cotton and growing cotton making use of an integrated pest management system. Figure 4.4 below gives an indication of options for sustainable cotton.

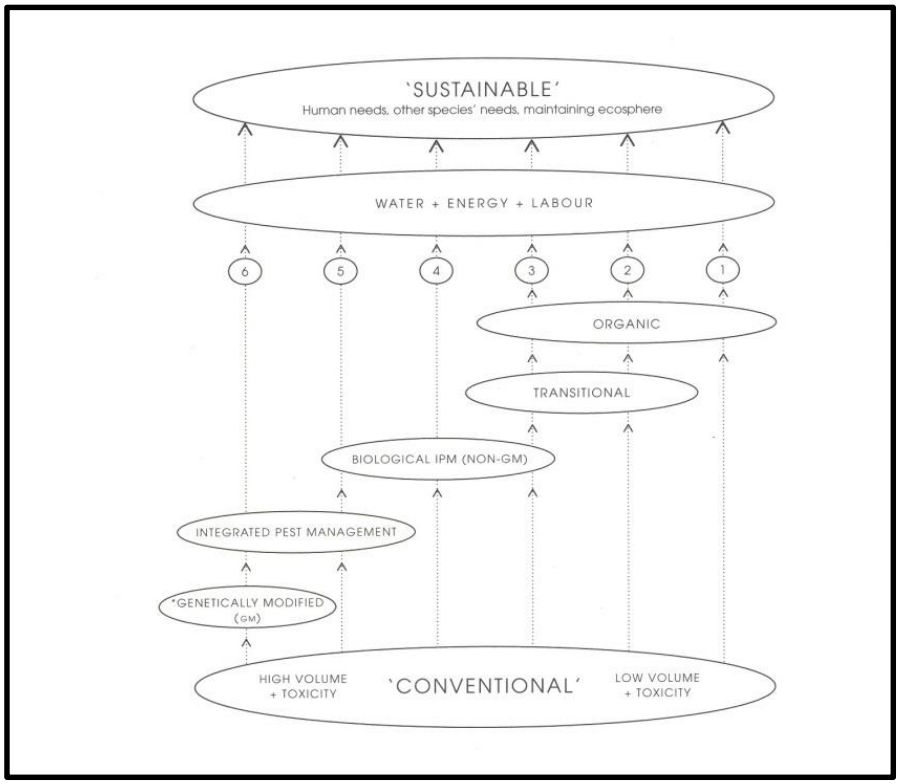


Figure 4.4: Expanded options for sustainable cotton
(Fletcher & Grose, 2012:24)

Low-resource use is a key choice in fibre selection and manufacturing processes for environmentally sustainable fashion and refers to water and energy use. Energy-saving practices in fibre production include aspects such as re-extruding polymers into new fibres rather than manufacturing virgin fibre. Fletcher and Grose (2012:26-30) mention that manufacturing natural fibres is generally considered lower in energy use than regenerated fibres and synthetic fibres. Of all natural fibres, hemp uses the least amount of energy. Water use is a key aspect in the development of fibres, and companies such as Patagonia publish a water footprint of their products. According to the company, a cotton or cotton-blend T-shirt uses the most water. **Predator-friendly** fibres mainly concern the development of wool which can create an imbalance in the wider ecology and can have a more devastating long-term effect than using chemicals in cotton production. Six specific approaches to environmental sustainability in fibre selection presented in this sub-section, inform the development of fabric.

[45] Minney (2011) explains that at least three pesticides used on cotton are part of the 'dirty dozen', agreed upon at a 2011 UNEP conference to ban them; to date this has not been applied.

4.2.2 Fabric development

In this sub-section, the development of the fabric is discussed by considering aspects that influence environmental sustainability. Fibres are spun, which in turn are woven, knitted or bonded into a fabric. Even though the technology used and the processes implemented to combat environmental damage is beyond the scope of the fashion designer, it is important that as a designer one is aware of these processes. The second part of the narrative of 'from fibre to textile' explains the process of developing a textile from the fibres described above, looking at chemical bleaching and dying processes used.

According to Fletcher and Grose (2012:34-44), the early environmentally sustainable fashion processes suggested the merit of using unbleached and un-dyed products. Chlorine-based **bleaches** are absorbed into waste water and subsequently affect humans and wildlife. The bleaching process is an essential step in preparing textiles for dying processes, as bleaching affects the long-term durability and the colour-fastness of the dyed textile. Fletcher and Grose (2012:35) argue that "…the cost of bleaching as measured in resource-consumption and pollution-generation terms clearly has to be balanced against visual desirability and long-term durability…".

An alternative to bleaching is using hydrogen peroxide, but this process requires a higher temperature and thus uses more energy and requires stabilizing chemicals for effectiveness. Alternate bleaching processes are generally more expensive than chlorine bleaching processes; however the cost of cleaning waste water is reduced when using alternate bleaching processes. An alternative to bleaching and bleaching systems is the use of enzymes. Enzymes are proteins that are used to catalyse specific reactions. For example, enzyme technology is used in creating surface textures such as those used in denim or for cleaning waste water. Peroxide enzymes are used to end the peroxide cleaning process thus resulting in a lower pollution index than other generally used reducing agents (Fletcher & Grose, 2012:35-36). Not everybody accepts the use of enzyme technology – as Fletcher and Grose (2012:36) point out "…the Global Organic Textile Standard (GOTS) prohibits the use of enzyme treatments because they are derived by genetic modification".

Colour plays an important role in the commercial appeal of products. The use of natural resources in the application of colour is an important aspect to consider as part of an environmentally sustainable strategy. Water-use and water-waste are the two components that have an impact on natural resources. No specific chemical colour is deemed to have more or less impact on the environment. Some colours such as turquoise and bright blue require copper to achieve commercial colour fastness. Fixation-rate is the colour-fastness of the dye. The higher the fixation rate, the lower the exhaustion rates, which is the amount of dye that is left in the dye bath and is flushed away. The dye process is a linear system in which resources

enter, are processed and are dispelled, and where different chemical components for different fibres are used (Fletcher & Grose, 2012:39; Black, 2011:158-159). Making use of natural dyes or regionally available dyes (making use of a natural colour palette of the fibres) is seasonal and could pose a solution for smaller dye lots, but these approaches do not offer an economically sustainable solution for volume production. A major component of a clothing product is fabric, and therefore this has a high impact on the environmentally sustainable status of the product. However, how the products are made and the labour conditions are of equal importance.

4.3 PRODUCT DEVELOPMENT

This section discusses the process of taking the textile to develop a product by considering the components used, the production environment with regard to labour, the production processes implemented, and preparing the product for market (finishing), in order to develop an understanding of the garment manufacturing environment, as portrayed in Figure 4.5.

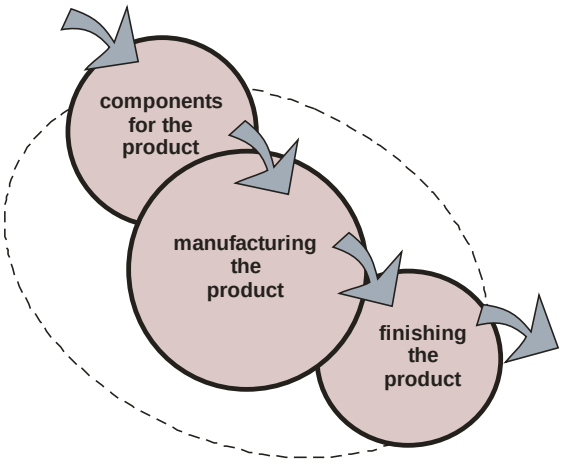


Figure 4.5: Focus: product development
(image developed by the author)

To consider environmental sustainability in this regard, one needs to consider the use of resources, the processes implemented, the reduction, use and disposal of waste, the labour, the carbon emissions and the supply chain. Principles to support best practice are summarised in the following goals and actions as reflected in Table 4.2.

Table 4.2: Goals and Actions
(as described by Fletcher & Grose, 2012:34)

GOALS	(Possible) ACTION
Make wise use of natural resources	Minimise the number of processing steps
Reduce the risk of pollution	Minimise and reduce the number and toxicity of chemicals used and eliminate harmful processes
Minimise resource consumption	Combine processes, or use low temperature processes Eliminate water intensive processes
Reduce load on landfill	Minimise waste generation at all stages

There are several approaches that are considered in the fashion industry currently and that speak to environmental sustainability. For this study, the approaches are grouped into three categories, namely slow fashion, ethical fashion and zero waste. The strategy of slow-fashion suggests that fast is unsustainable, therefore 'slow' would imply sustainability; slow-fashion is derived from the slow-food movement. Ethical fashion is a strategy that focuses on ethical use and application of resources, an ethical approach to labour and an ethical approach in business (Black, 2011:182). Zero waste is a strategy that not only relates to use and disposal of resources, but is also a new approach to product development. These three strategies are discussed in order to explain how environmentally sustainable design is implementable in product development.

4.3.1 Slow fashion movement

In this sub-section, **Fast versus Slow**, a movement that is based on the slow-movement found in food production, is discussed. Fast-fashion is not shaped by speed, but by universal business practices based on supply and demand and continual growth, therefore using a standardised mass production approach (Fletcher, 2010:259-265). The need to bring designs to market more quickly is a result of a number of aspects. The first is that fast-fashion is a result of cheaper production in Eastern countries, therefore the idea is to design more cheaply with cheaper components, easier production methods, cheaper labour, short(er) lead times and in higher volumes. This places new products in stores every few weeks, increases the consumers' desire for the new and leads to increasing sales and growth. The result of this continued practice is depletion of resources, increased pollution, high carbon footprint and questionable labour practices. Consumers often buy frequently and thus discard equally fast.

Slow-fashion, in opposition to fast-fashion, argues that it represents a vision of sustainability, and although, in language, slow is the opposite of fast, in this context (and in culture), they are not opposing *per se* (Fletcher, 2010:262). They are diverse worldviews that are based on a different economic logic and business model and other values, therefore this implies a change in 'the way things are done' currently. One possibility is to mimic the principles of slow-food by

emphasising small scale production, sourcing locally, promoting and incorporating craft. This challenges the growth model and requires design to think about design processes, resource flow, communities and ecosystems. The result is probably (as in the slow-food movement) a higher priced product which supplies a niche market.

Similar to Fletcher, Clark (2008:429) suggests that the slow approach should be based on challenging the existing flow of design-produce-consume, questioning the current need by the consumer for 'the new', challenging the consumer's reliance on image, presenting a choice rather than a mandate and highlighting collaborative/cooperative work. Clark (2008:429-445) gives examples of using localised labour markets for highly crafted products, smaller scale production and recycling (re-working) existing products. She equates 'slow' to 'sustainable' and argues that such an approach should focus greater attention on 'knowing and valuing' the product, thereby promoting design that generates significant experiences, that is not transformed into images for rapid consumption (based on the Slow+Design Manifesto of 2006).[46] Clark (2008:443) suggests valuing the local and using transparent production systems with fewer intermediations as a possible solution for slow-fashion.

In fashion design and production the slow-fashion movement is achieved by various approaches, for example focussing on local resources such as the knitted products produced by Alabama Chanin.[47] Another approach engages with production methods (Figure 4.6) that are shaped by ecological limits such as the company Bedlam Boudoir in the UK, whose production is powered by 12V batteries charged by solar energy and wind powered generators (Fletcher & Grose, 2012:176).[48]

[46] The Slow+Design Manifesto was presented at the 2006 Slow+Design symposium in Milan and proposes an approach that offers "…time to produce, appreciate and cultivate quality"(Clark, 2008:429).

[47] Natalie Chanin makes use of local artisans to develop and produce the knitted articles. Her business model is based on her commitment to the local community and their skill, therefore volume and speed are based on the speed of her artists (Fletcher & Grose, 2012:175).

[48] This enterprise focusses on low-impact solutions in production-to-retail and is able to generate sufficient income for four families (Fletcher& Grose, 2012:176).

Figure 4.6: A product produced by Bedlam Boudoir
(Fletcher & Grose, 2012:177)

4.3.2 Ethical fashion

Ethical Fashion, a movement that incorporates sustainable environmental ideals and approaches, is considered in this sub-section. Ethical fashion refers to the use and application of resources, considering labour practices in the entire supply chain and fair trade principles. Ethical use of resources perhaps is, as Joergans (2006) describes, mostly based on incorporating organic components as far as possible, yet developing, sourcing and using organic and non-organic components should all be considered from an ethical viewpoint, and not merely, as Joergens suggests, focussing on the manufacturing of products such as good and fair working conditions (for example, sweatshop free). Joergans' (2006:369) study found that ethical fashion has little effect on consumers' fashion purchase behaviour and it seems that the consumers' knowledge of ethical issues that underpin ethical fashion have very little influence on their choice of purchase. This might be because of their knowledge of the topic, but also because of the price bracket of the product. Consumers seem interested, but it is doubtful whether this would really influence their choice of purchase. All of the above-mentioned are aspects that should be considered during design development, and all place design as the core of environmentally sustainable fashion development. Fletcher & Grose (2012:51) suggest several strategies for design of which fair labour is the focus. These include choosing Fair Trade suppliers and working with companies where working conditions can be observed through personal engagement (Fletcher & Grose, 2012; Black, 2011:182-185).

4.3.3 Zero waste

Zero waste, an accepted construct used in discussion of environmental sustainability in the fashion industry, and which is discussed in this sub-section, is an approach to reducing waste during the process of manufacturing, or to design with minimum waste in mind. This suggests that something should be done with the waste, either to incorporate the waste in the product or to use the waste to develop other products, such as recycling waste fabric for new yarn use. Zero waste does not suggest that no waste is generated.

In a volume manufacturing environment, the designer very often is not involved with manufacturing processes beyond the design (the sketch) and therefore**,** as Fletcher and Grose (2012:44-50) suggest, this notion requires that one designs from a zero waste approach, thereby ensuring that no or minimal components and resources are wasted when a product is produced. The above ideas are helpful in waste reduction and ultimately slowing textile consumption, but as Fletcher and Grose (2012:48) mention, true waste reduction lies in the skill and craft of the designer and this is where the real application of sustainable practices are achievable. Figure 4.7 is an example of how zero waste is considered in the development of pyjamas by Timo Rissanen.[49]

Figure 4.7: Pattern development and final product, exhibited at Zero-waste: Fashion Re-Patterned.
Designed by Timo Rissanen
(Rissanen, 2011)

[49] This blog seems to be part of this Rissanen's PhD, in which he is investigating fabric creation without fabric waste creation. The work presented in Figure 4.7, forms part of an exhibition – Zero Waste: Fashion Re-Patterned, in April 2011, at Columbia College, Chicago (Rissanen, 2011).

In the above example the pattern is shaped by using the negative spaces (the spaces in-between the pattern pieces) in the layout and thus the shape of the jacket emerges from the lay-out. This is different from a more traditional approach where the shape is super-imposed on the lay-out with resulting negative spaces and waste pieces.[50] Fletcher argues, "…it is in the designer's creativity and ability to make quantum leaps of imagination that holds the potential to transform not just the way we make things, but also the way we think" (Fletcher & Grose, 2012:48).

In this research three possible strategies for implementing environmental sustainability with regard to manufacturing of fashion products were discussed, yet how these products move from the factory to the retailer can negatively impact good environmentally sustainable intentions.

4.4 FROM FACTORY TO RETAIL

In this section packaging, distribution and retail are reviewed, by looking briefly at methods of distribution and how information on packaging could be used as a tool in order to inform the consumer, as illustrated in Figure 4.8.

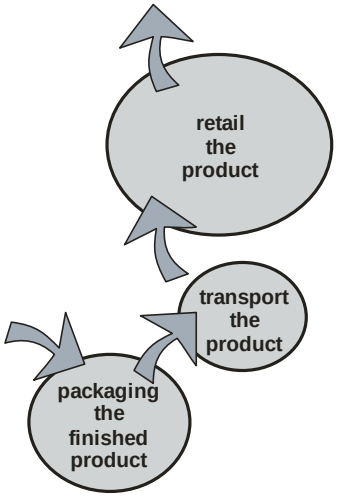


Figure 4.8: Focus: packaging and distribution
(image developed by author)

A company's transportation represents one per cent of the carbon footprint. During an interview with the director of innovation at Nike, Dr Sokolowski, it is mentioned that Nike sells clothing and footwear that are produced by roughly 600 companies in over 50 countries by approximately one million workers, selling in approximately 25 000 stores across 150 countries

[50] In the low to no-waste jacket lay-out process, the designer becomes the facilitator (Fletcher & Grose, 2012:48).

world-wide (DeLong, 2009; Chhabara, 2010). The mere global size and range of this industry uses various methods of transportation and complex networks to develop fibre, fabric, and final product. Therefore actual carbon emissions are often difficult to determine, estimated at somewhere between 1% and 55% (Fletcher & Grose, 2012:57). To develop an actual carbon-reading requires openness and commitment by all in the supply chain.

Timberland's shoe product information label is an interesting example of how environmental sustainability is communicated, both with regard to the tangible components of the product, but also the intangible elements that are part of the product, such as the carbon footprint during product development, packaging and transport (Esty & Winston, 2009:130,172-173). The shoe's "footprint" on the side of the box is similar to the nutritional facts on food packaging, it informs the customer about the energy used to produce the shoe and gives information on other environmental impacts.

Transforming fibre to fabric, product development and lastly retail are aspects of the entire chain of events where design can have a direct input through considered decision-making. In the following sub-section, the use and disposal of the product is considered as consumer decisions and actions where design has a minimal direct impact, yet where design should have influence. Armstrong and LeHew (2011:56) mention that in a new, dominant social paradigm, the practices of creating products that are only responsive to market needs without considering the limits that the ecosystem might have, would seem simplistic and possibly wasteful. They argue that in order to achieve a holistic approach to environmental sustainability, efficient use of resources, effective practices, and considering consumer needs that are inherently more social than material, are essential.

The above stages, from fibre to retail, is what Black (2011) considers the pre-consumer phase, and where decisions made with regard to environmental sustainability are technical in nature. The following stages, from use to the discarding of the fashion product, could be considered post-manufacturer and post-purchasing phases, where emotive and lifestyle decisions could be influenced by technical decisions, but are dependent on consumer choice (Black, 2011:195).

4.5 USE OF THE PRODUCT

In this section, aspects that are considered are the use of the product by the consumer, focussing specifically on laundering, consumer care and using substitute or new technologies for laundering (Figure 4.9). The impact of laundering and consumer care on environmental sustainability is substantial (Fletcher & Grose, 2012:60; Black, 2011:235).

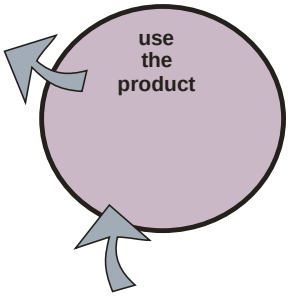


Figure 4.9: Focus: consumer use of product
(image developed by author)

Energy consumption in laundering and care of frequently washed garments is often four times that of manufacturing the product. It needs to be mentioned that this does not hold true for all products, and generally the energy consumed in laundering is localised, whereas the energy used in production is often spread over a greater geographical area. The most "…influential sustainable strategies would be to change how people wear, wash and dry clothes" (Fletcher & Grose, 2012:60). In this regard, even a small change in habit or information communicated to the consumer could have a significant impact. Information regarding low wash and dry techniques and explanatory care labels can enhance communication of environmentally sustainable practices to the consumer (Fletcher & Grose, 2012:60-62). Nano technology in the form of fabric coatings and treatments can enhance the durability and stain resistance of products; however, additional coatings reduce the recyclability of a product at the end of its lifecycle (Black, 2011:235).

4.6 DISPOSAL OF PRODUCT

This section presents the disposal of the product by reviewing all possible methods of disposing of a garment, in order to determine how design decisions can impact on this last step in the lifecycle of a garment. According to Fletcher and Grose (2012:63-64), recycling, in any format, does not necessarily prevent waste or wasteful behaviour, neither does it address any wasteful processes in manufacturing, but it does minimise the amount of product discarded.

Therefore, recycling, as presented in Figure 4.10, can address "…extended producer responsibility, life-cycle thinking and chains of accountability" (Fletcher & Grose, 2012:64):

> Philosophically and practically, making the designer or retailer [and manufacturer] accountable for the future disposal of products completely changes the logic of clothing production, distribution and sales. It actively, and legally, extends the activity focus of producers beyond the upstream manufacturing chain to include downstream actions, resource flows, and future consumer behaviour.

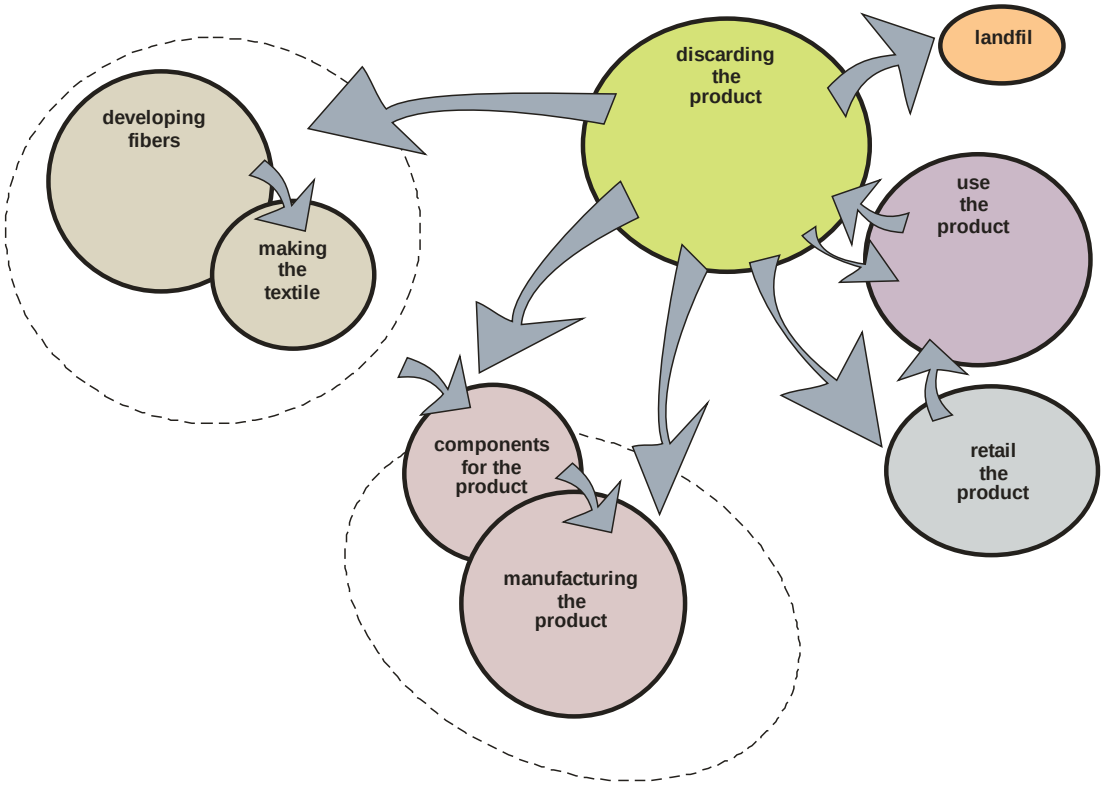


Figure 4.10: Focus: discarding the product
(image developed by the author)

Several possible approaches to discarding of a garment product are portrayed from left to right in Figure 4.10. Disassembly, recycling into another product (down-cycle) and recycling into a new garment-related product (up-cycle), re-use (vintage, re-sell), and the landfill are all possible methods of disposal (Fletcher & Grose, 2012:63-73).[51] As design has no direct influence on the disposal of garments at the end of their lifecycle, designing clothes with future purpose requires a radical new approach to thinking about designing environmentally sustainable fashion products. This refers to the circular notion of cradle-to-cradle as opposed to the linear notion of cradle-to-grave (landfill) as argued by McDonough and Braungart (2002) and aligns to Fletcher and Grose's (2012:63) slowing the flow of materials.

4.6.1 Disassembly

The first approach, disassembly of garments and re-use of garments or components thereof, is presented in this sub-section, and could be grouped into two areas. The first refers to products that are entirely shredded chemically or manually to develop fibres for new products (Fletcher & Grose, 2012:63). This resource-intensive process of re-conditioning is resource-

[51] In Great Britain approximately three quarters of textile products end up on the landfill (Fletcher & Grose, 2012).

light if compared with the development of virgin fibre. Re-use of fibres in this manner reduces the quality of the fibre and a down-graded product (such as a blanket) is the result.

The second refers to products that are disassembled into components that are re-used in 'new' garments. Cradle-to-cradle apparel design (C2CAD) is a strategy where an entire garment is designed to be taken apart and components thereof re-used. A group of writers (Gam, Cao, Farr & Heine, 2008; Gam, Cao, Bennet, Helmkamp & Farr*.,* 2011) wrote two papers on the application of cradle-to-cradle for apparel design (C2CAD). It is based on the cradle-to-cradle principle by McDonough and Braungart (2002) and proposes design for disassembly. In the first paper, written in 2008, the authors incorporated the cradle-to-cradle principle in knitwear design and production. Three years later (2011), the second paper explored the application of the method in the design of a man's jacket with regard to disassembly, re-use and recycle. Men's' tailored jackets are generally made of natural and synthetic fibres and have complex construction methods. The authors (Gam *et al.* 2011) argued that conventional methods of construction make it difficult to disassemble components successfully, but demonstrated (in the article) that it could be possible. The authors concluded with a number of strategies that could facilitate design for disassembly, namely to minimize material diversity, to select appropriate materials and construction methods and to use construction methods that facilitate the above (for example, larger stitch size). Fletcher and Grose (2012:64) mention that a cradle-to-cradle approach such as the above example and other 'take-back' schemes, are part of producer (and thus designer) responsibility and life-cycle thinking and make the producer (designer) and retailer partially accountable for future disposal of the product.

4.6.2 Recycle

The second approach, namely to **recycle** (down-cycle and up-cycle), is discussed in this sub-section. The recycling of fashion products can occur pre-consumer and post-consumer and includes take-back programmes such as that of the Salvation Army, where a product is re-distributed to communities in need. Recycling can also be where existing products are re-made into other products (for example, a handbag made from old jeans) or old garments made into new garments (Fletcher & Grose, 2012:68; Black, 2011:194-195). Products that are incorporated in a recycling approach could be used, vintage or un-sold garments. Pre-consumer recycling refers to using factory waste to develop a product, as shown in Figure 4.11(a), whereas post-consumer recycling is also referred to as reconditioning (something that has been in practice for centuries) which is labour intensive but does provide a new avenue for design as reflected in Figure 4.11(b).

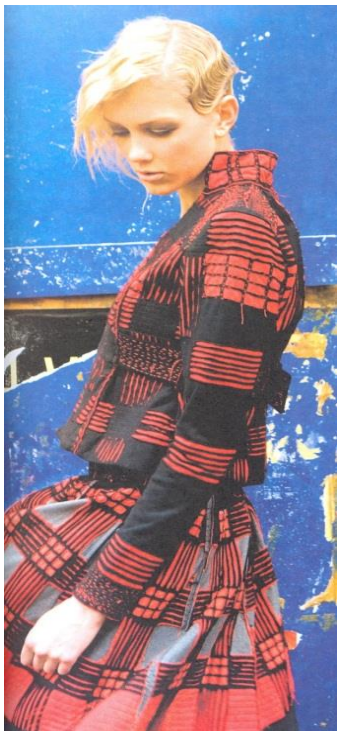


Figure 4.11(a): Pre-consumer recycling - using factory waste, designed by Karina Michel
(Fletcher & Grose, 2012:72)

Figure 4.11(b): Post-consumer recycling - using reclaimed trench coats to make this dress, designed by Gary Harvey
(GH, n.d)

Recycling places design in a re-active position where the final product is dependent on the type of material available to the designer and the condition that it is in, and products therefore cannot conform to the volume production that some large retailers offer. The above thus creates new opportunities in retail. All of the above mentioned ideas only delay the movement of product to the landfill as it will ultimately end up there, but recycling also is an approach to create a closed loop system (Fletcher & Grose, 2012:67).

A pro-active approach requires that environmental sustainability be planned. A suggested new metabolism for the wardrobe that takes environmental sustainability into considerations, as depicted in Figure 4.12.

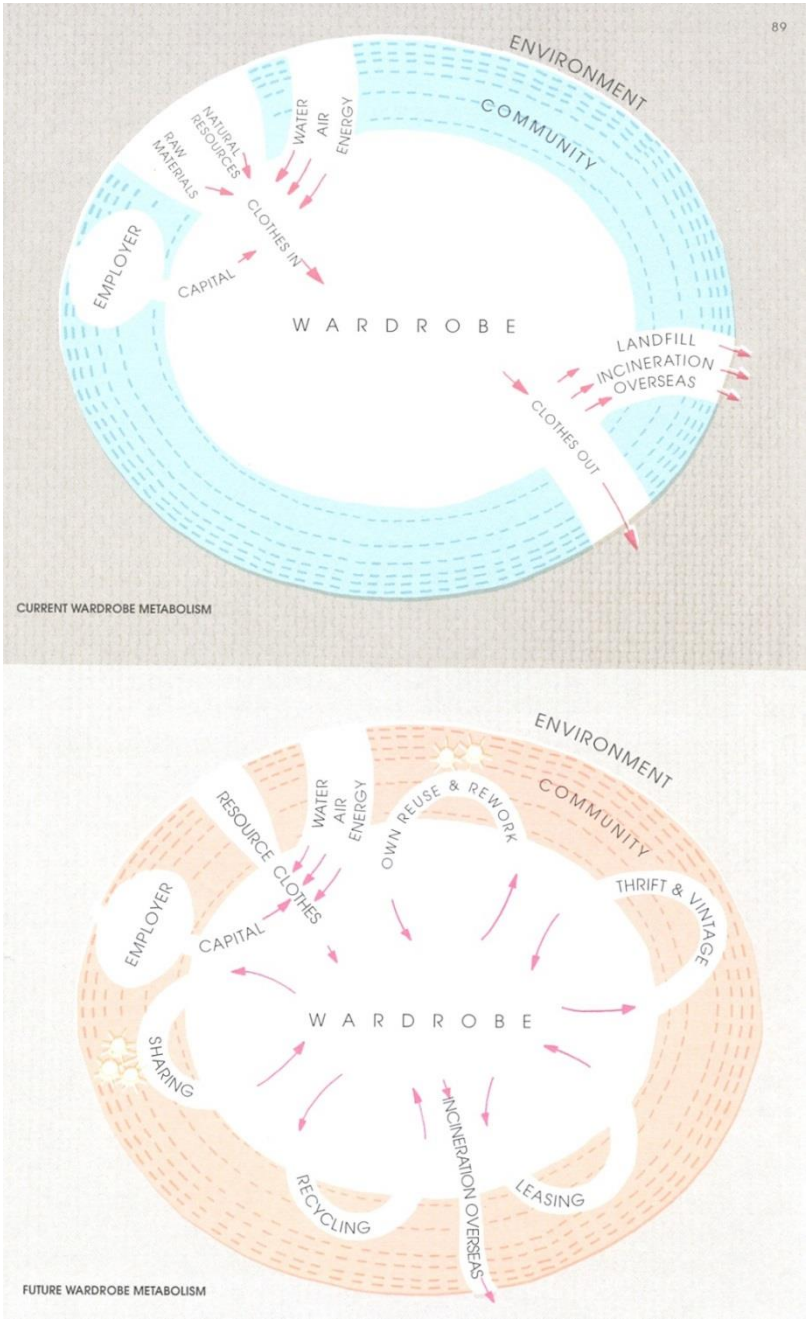


Figure 4.12: New wardrobe metabolism
(Fletcher & Grose, 2012:89)

The future wardrobe metabolism is a suggestion to slow personal material flows and is a possible future scenario where, as the authors suggest, products are constantly re-worked and re-used instead of consumers acquiring new products. In this suggested scenario shopping is no longer the main focus of the fashion experience and the approach encourages optimum use of product and requires the consumer to be actively involved with the re-imagination of their wardrobe (Fletcher & Grose, 2012:85-91). The complexity of the fashion industry is apparent and therefore the role of design and thus the designer to drive or influence environmentally sustainable fashion has become increasingly important.

4.7 SUMMARY AND DISCUSSION

The aim of this chapter was to explore fashion design praxis by reviewing the lifecycle of a fashion product, from fibre development to its disposal, in order to determine where and how environmental sustainability could be applied. This was achieved by dividing the lifecycle into five clusters. The first cluster, fibre to fabric, considered fibre development and fabric development. Approaches to fibre development that were considered were renewability, biodegradability, people-friendly fibres, low chemical use, low-resource use and predator-friendly fibres. In fabric development, fabric finishing with regard to use of bleaches and colour was discussed.

The second cluster, product development considered three specific approaches, namely, slow fashion, ethical fashion and zero waste. Slow fashion, which challenges the current growth model, considered small scale production and sourcing locally as viable strategies. Slow fashion requires design to think about design processes, resource flow, communities and ecosystems. Ethical fashion refers to the use of both natural and human resources, and thus considers the application of resources and labour practices in the entire supply chain. The third approach, zero-waste, considers both reducing waste during manufacturing and designing with minimum waste in mind. The third cluster, factory to retail, considered the carbon footprint of fashion products, as well as revealing product content and the sharing of information. In the first three clusters, the focus was on pre-consumer processes. The last two clusters considered both pre-consumer approaches and post-consuming approaches. The fourth cluster referred to the use of the fashion product, specifically considering laundering processes. The fifth cluster, disposal of the fashion product, presented design for disassembly and recycling as two approaches to consider.

Fletcher and Grose (2012:12) mention that to date, most of the development in environmental sustainability has been in the development of fibres and textiles. However the use of an environmentally sustainable textile alone does not ensure an environmentally sustainable product. They group possible environmentally sustainable strategies into four areas. The first area concerns the development of renewable source material such as renewable fibres. The second area, considers using resources such as water and energy effectively, thereby minimising chemical impact and lowering carbon footprint. The third area, suggests taking fair labour practices into consideration and conditions of textile and product development. The fourth area focusses on reducing waste and considering the lifecycle of the product at the product development stage. The SASTAC Material Issues report discussed in Chapter 1 labelled the environment the ‘poor cousin’. Only two of the industry members interviewed considered environmental issues, such as water, energy and waste management in the fashion industry in South Africa, important (SASTAC Material Issues report case study,

2014:17-20). The report suggests that industry needs to develop a greater awareness of environmental sustainability issues in the entire fashion system.

Sub-question two consisted of two parts. Where this chapter answered the first part of the sub-question, the next chapter, Chapter 5, focusses on answering the second half of the sub-question, namely, what role design has in environmentally sustainable fashion design praxis.

CHAPTER 5

DESIGN, DESIGNER AND ENVIRONMENTAL SUSTAINABILITY: THE EMPATHIC TASK

Design is realised through the manifestation and integration of ideal, if not always creative, concepts into the real world. Design is a compound of rational, ideal, and pragmatic enquiry. Design is constituted of reflective and critical thinking, productive action, and responsible follow through.

Nelson and Stolterman, 2012:5

Based on how Buchannon and Margolin (1995) define design (as a broader discipline), design as (product) planning is an activity that is practiced by professionals, the result of which can be shaped by an analytical approach to method. Design, as product, is evident of values that have been instilled in it (Smal, 2014). Highmore (2009) agrees with this explanation but adds process to the definition. He mentions that the process results in either a product or an active sense of moulding and shaping the world we live in. Walker, as mentioned by Armstrong and LeHew (2011:30) suggests that fashion is a passing trend and actually refers to fashion as a fad, something that is "…transient, superficial and often wasteful". Fashion is the opposite of long-lived and therefore is an impediment to sustainability. In addition to the above, Black (2010:256) argues that, in order for environmentally sustainable fashion to be feasible, it (environmentally sustainable fashion) needs to satisfy the consumers' symbolic need, while simultaneously transforming their relationship with clothes. The purpose of Chapter 5, as presented in Figure 5.1, is to explore the development of environmental sustainability within the fashion industry and to explore design-driven environmentally sustainable fashion praxis. Chapter 5 thus achieves Objective 4 of Sub-question 2, and contributes to the development of the conceptual framework used in the case study.

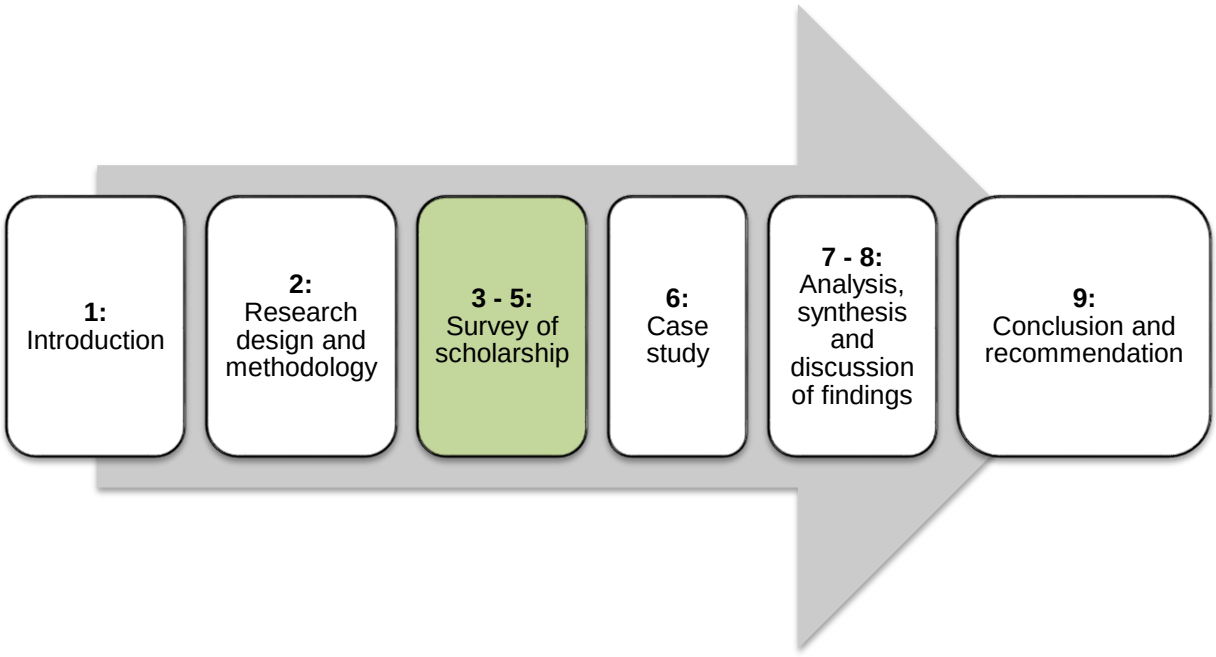


Figure 5.1: Schematic representation of case study – survey of scholarship, part three (developed by author)

The strategy to be followed in Chapter 5 is three-fold: firstly, design theory, design thinking and design activity is reviewed through selected authors. The work of Nelson and Stolterman (2012) informs design in broader context, and the work of Dorst (2008; 2011), Lawson (2010) and Cross (2006; 2011) explore the role of design and designer. Secondly, the role of fashion design and the fashion designer is explored by reviewing the work of Bye (2010) and

Greenberg Ellinwood (2011). Lastly, a discussion on a paradigm shift needed for environmentally sustainable fashion design, based on the work of Armstrong and LeHew (2011), concludes the chapter. The intention of this chapter is to add to the survey of scholarship which informed the development of the conceptual framework required for data collection, organisation of data, analysis of data and reporting of the findings.

5.1 DESIGN

In this section, design is viewed by considering what the importance of design and the designer is, in order to provide a foundation from which to explore environmental sustainability in fashion design. The section firstly considers the importance of design and secondly the role of the design and the designer.

5.1.1 The importance of design

In an unpredictable world, the "…everyday events result in unpredictable outcomes" and suggests that desired change can be brought about by human intention. The authors (Nelson & Stolterman, 2012:2), state:

> Human intention, made visible and concrete through the instrumentality of design, enable us to create conditions, systems, and artefacts that facilitate the unfolding of human potential through designed evolution in contrast to an evolution based on chance and necessity – a highly unpredictable process.

According to Nelson and Stolterman (2012:4-5), although design is considered to be based in creativity, it is inclusive of aspects such as innovation, creative thinking, and activities that are positioned in the real world. The authors argue that design should be considered the third culture (science and art being the other two) with its own approach to learning and inquiry (Nelson & Stolterman, 2012:12). According to the authors, design is visible in every aspect of the real world, and as such has had great impact, but also done great harm.

Nelson and Stolterman (2012) argue that design is constituted of several aspects. Firstly, design-will, which provides the intention for humans to create new meanings, forms and realities, in order to better the world (Nelson & Stolterman, 2012:13). This provides a motivation for design. Secondly, design-wisdom, is a far more in-depth approach to problem solving, and is an integration of "…reason with observation, reflection, imagination, action, and production or making" (Nelson & Stolterman, 2012:18). In addition, design-wisdom encourages change, and it is this human need for change that allows design to approach problem solving through the integration of elements of the complex problem. The above, namely design-will and design-wisdom form a design-culture. Three specific aspects form part of the suggested design-

culture, namely, design as the particular; design as the systemic, and design as the whole (Nelson & Stolterman, 2012:21-23).

According to the authors, where art is based on intuition, and science on logic, design is considered to be the mid-point between art and science, thus design inquiry is the emergent compound of actioning the ideal (that which is desirable as an outcome) into the real (the expected outcome), therefore, the design-action is both the journey and the expected outcomes (Nelson & Stolterman, 2012:35-39). It is the design-action that instils change. Nelson and Stolterman (2012:38) suggest that change is: "…triggered by human intention that is at the heart [cause] of design." Design-cause is thus the consequence of free will and innate desire for humans to be purposeful in their interaction with the real world. While the outcome of inquiry is knowledge, design-knowledge requires "…intentional not-knowing", which implies that design-knowledge is based on "…reason (conscious knowledge), intuition (hardwired, unconscious knowledge), and imagination (subconscious knowledge)" (Nelson & Stolterman, 2012:39).

Design-as-service differs from science, which considers the curiosity of knowing, and art that is an expression of own thought and is thus self-serving. Design, is other-serving, and thus self-expression is not the dominant aspect (Nelson & Stolterman, 2012:42-43). The authors suggest that design-as-service requires a focus on responsibility, accountability and intention, and that design-as-service (whether for a client or with a client), leads to design-expertise. In design-as-service, the other is treated as an equal, and thus should be considered as a service relationship between equals. Even though design-as-service is a defining characteristic of design, it is not framed as such in all design disciplines. In the discipline of fashion design, design-as-service is only visible in the high-end market where designer-client interaction occurs, but where the designer is perceived as knowledgeable and the client as 'un-knowledgeable'.

Nelson and Stolterman (2012:47-50) differentiate between the designer-facilitator and the designer-expert relationship, and mention that the roles of client and designer in each situation is unique. The key point in design-as-service is that (Nelson & Stolterman, 2012:49): "…the designer is responsible to more than just the client, and must assume accountability for others who will be affected by any particular design activity". The above thus requires that design-communication is based in listening and not selling outcomes, encouraging a balanced relationship.

In design-as-the-systemic, design is considered to be the "…compound of integrative, inclusive, and connected thinking, aimed at taking right action…" (Nelson & Stolterman, 2012:57). Therefore design cannot function in a vacuum and thus is based in systemic relationships and connections. Design can be defined as an interdependent activity that

involves multiple inputs from the multi-dimensional realms of the world. Systemic design thinking requires thinking holistically, and forms the basis for logic and reasoning (Nelson & Stotlerman, 2012:58-60). Systemic design thinking is therefore an approach to learning about things or people, and how these influence things or people, through both observing the world and being in the world. Systemic design thinking focusses on "…relationships between the domains of knowledge and on patterns of relationships that emerge as a consequence…" that give meaning through interpretation and provide a map for development (Nelson and Stolterman, 2012:61).

Nelson and Stolterman (2012:93-97) argue that one of the characteristics of design is its holistic character, which requires that the designer act comprehensively and inclusively. The authors argue that a holistic design approach is achieved through careful ordering and organising of elements through intentional relations and connections (Nelson & Stolterman, 2012:102). Design can consequently be summarised as the will to improve the world, through design-wisdom that encourages change. Design is the inflection-point that can 'action' the desired outcome into the real world, therefore design-action can inculcate change. Systemic design thinking thus encourages interdependent design activity and thus an integrated holistic approach, as suggested by Fletcher and Grose (2012).

5.1.2 Design and the designer

In order to elaborate on design and the designer in general, and to develop a base from which to establish the role of the fashion designer, specific reference is made to the work of Dorst (2008; 2011), Cross (2006; 2011) and Lawson (2010) in this section. In short, Dorst (2008:5) describes design as follows: It is the seeking of a solution for a design problem, where the *activity* (design process) or *content* (the object of the design process) in which the *actor* (designer), informed by the *context* (the field), needs to operate. Thus, a design problem has four aspects that inform and shape it. In 2008 Dorst argued that most research focussed on the effectiveness and efficiency of the design process, and thereby generally ignored *design content*, *design context* and the *designer*. The focus on designer and design context was (at the time) still lacking (Dorst, 2008:5). Since then, studies on design content have developed, of which good examples are Design for Sustainability (DfS) and User-centred design.

Design as activity is simultaneously precise and vague, therefore it is a systematic and chaotic thinking process that requires considerable technological skill and knowledge (Lawson, 2010:4-5;25; Smal, 2014). Design-problems are impacted and influenced by parameters, referred to as 'generators of constraints' that have a direct or indirect influence on the design problem (Lawson, 2010:83-111). In addition, four design specific parameters can be identified,

namely, fundamental (radical) parameters that relate to the primary purpose of the design object, process or system; practical parameters that inform process; formal parameters that are guided by the rules of the design discipline (relating to function and aesthetics), and symbolic parameters which relates to meaning (Lawson, 2010:103-108; Smal, 2014).

Although the focus of this research study is not about the knowledge and skill of a fashion designer, in order to understand the designer (and how design can influence and drive environmental sustainability) better, I refer to Dorst's (2008) six levels of designer expertise. The six levels correspond to six operational methods that each designer works from, as described in Table 5.1 below. These operational methods are used to perceive, interpret, structure and solve the design problem (Dorst, 2008:8).[52] In the table a seventh level is added at the beginning, as a focus on co-design is an area that is currently developing. In co-design non-designers are often incorporated into the design process and design-as-service as suggested by Nelson and Stolterman (2012).

[52] Dorst bases this on the work of Herbert Dreyfus (2008:8).

Table 5.1: Seven levels of design expertise
(based on Dorst, 2008:8-9, adapted by Smal, 2014)

LEVEL	LEVEL OF EXPERTISE	DESCRIPTION OF LEVEL	TYPE OF DESIGNER
LEVEL 0:	**Naïve**	A process adequate for everyday use in conventional situations. A naïve approach, the design is not perceived as a series of activities	Non-designers (for example, anybody)
LEVEL 1:	**Novice**	Design is perceived as a formal process where design problems can be solved in a series of steps. Designers will use techniques and methods (abiding by strict rules) to solve problems, and it works within a framework of *rules.*	A young designer
LEVEL 2:	**Advanced beginner**	For this designer situational aspects are important – *situation-based* design. Specific rules are important, but slightly more complex problem solving can be achieved through increased expertise.	The second year student designer
LEVEL 3:	**Competent**	The competent designer selects elements in a situation which are relevant and plans to reach achievable goals. Problem solving includes seeking opportunities and building of expectations, and the designer can think strategically.	The recently graduated designer
LEVEL 4:	**Expert**	A designer with accumulative experience that is able to recognise *patterns* in design problems and respond intuitively. Usually a designer at this level, is well-respected by the design community	The professional designer
LEVEL 5:	**Master**	A designer that displays a deeper involvement with the profession and becomes the developer of *new knowledge* in the field.	The acclaimed designer that that has a broader holistic view on the discipline
LEVEL 6:	**Visionary**	A designer that strives to extend *beyond the boundaries* of the domain/discipline, and operates on the margins on the known domain, thereby creating new domains	The experimental designer

Dorst (2008:9) mentions that designers, in general, display rule-following behaviour. There is no evidence that a logical progression from one level to the next is a necessary process, but that each level comprises of specific methods of problem solving and reflection (Dorst, 2008; Smal, 2014). Designers do not just design; a major part of their practice consists of other activities, which are referred to as meta-activities (Dorst, 2008:10; Smal, 2014). Designers themselves create the environment in which they work. How they approach a situation, the role they take in the design problem, the coalitions they work within and the method with which they deal with the stakeholders of the project, all form part of the created operational environment

(Smal, 2014). To be able to understand the 'environment' that is referred to, Dorst (2011) calls it the 'frame' in which the design problem needs to be resolved.

Tan (2012:17-19)[53] uses Dorst as the basis for her research and mentions that the roles of the designer have changed, but that there is very little evidence to prove that it is so. She highlights that current design research literature very seldom engages with the roles of the designer and the literature she refers to reflects on the 'how to', rather on what the roles mean in relation to "…key practices, how they (the roles of the designer) expand the application of design and what value these roles bring to the project" (2012:46-47).[54] Tan's study reflects on seven roles of the designer (which speak to the seven case studies of her research investigation): these are designer as co-creator, researcher, facilitator, capacity builder, social entrepreneur and as strategist (Tan, 2012:19).

According to Dorst (2011:522-524), complex design problems are solvable by abductive reasoning. He refers to abductive reasoning as "…more complex [reasoning] because [at] the start of the problem solving process we only know the end value we want to achieve" (Dorst, 2011:522). The above relates to his explanation of the problem in *what* (thing) + *how* (working principle) leads to (aspired) *value* (what + how = value). In abductive reasoning two of the elements of the above equation are unknown. The level of expertise of the designer (as indicated in the Table 5.1) will influence how abductive reasoning (thinking) is applied in the problem that needs solving, a "…space where design problem solving occurs…" that Dorst (2011:524) refers to as the 'frame'. Framing, Dorst (2011) argues, is the 'space' where "…by applying a certain working principle we will create a specific value". Framing is a general term used in design literature for the development of an approach that will lead to the specific solution of the perceived problem. Dorst (2011:525) mentions that frames are a complex set of statements that include the:

> …specific perception of a problem situation, the (implicit) adoption of certain concepts to describe the situation, a working principle that underpins a solution and the key thesis: IF we look at the problem situation from this viewpoint, and we adopt the working principle associated with that position, THEN we will create the value we are striving for.

Within the design problem, clues lead to themes that can become clusters of ideas which will inform the approach that needs to be taken to solve the problem (Dorst, 2011:524-527). Framing can be a simple and logical process or could be addressed through super complex

[53] Lauren Tan's PhD thesis, *Understanding the different roles of the designer in design for social good. A study of design methodology in the DOTT 07 (Designs of the time) projects* (2012) is an investigation of how design knowledge is generated when "…design methodology is reframed from process to people, elaborating and articulating the practices, methods and value of designers when they design for social good." (Tan, 2012:i).

[54] The key authors Tan refers to in her study are, to name a few, Roth (1999), Press and Cooper (2003), Julier (2007), Morelli (2007) and Mazini (2009).

problems.[55] A designer with specific expertise could find a solution more quickly, or be more familiar (from known practice or previous experience) with the steps that lead to a possible solution. Design problem solving generally does not occur in a linear pattern and designers often work backwards through inductive reasoning (from what is known) to ultimately complete the equation of *what* + *how* = *value* (Dorst, 2011:525; Lawson, 2010).

What makes the frame in which design thinking and development occurs even more intricate, is that, in addition to the levels of expertise,[56] the type of *design activity* and the layers of *design practice,* will have an influence (Smal, 2014). Dorst (2011:526) mentions that design activities include formulating, representing, moving, evaluating and managing; whereas the layers of practice are based in choice, convention, situation, strategy or experience. Thus, one now has seven levels of expertise that could solve a design problem by applying an activity, or several activities from a specific point of view, which is based in experience or a particular strategic approach, and so on. It is in this convoluted web of the *kind of activity*, the *level of expertise* of the design and the *layers of practice*, of which there are three – project, process and actual environment – that a design problem, (complex or not) needs to be solved. By way of further explanation, Figure 5.2 is a visual representation of 'where design takes place'.

[55] Dorst refers to these as a paradox, as complex problems often include two (or more) opposing points of departure (2011:527). It is in these complex problems that the *what* and the *how* are unknown elements of the equation.
[56] Refer to table 5.1.

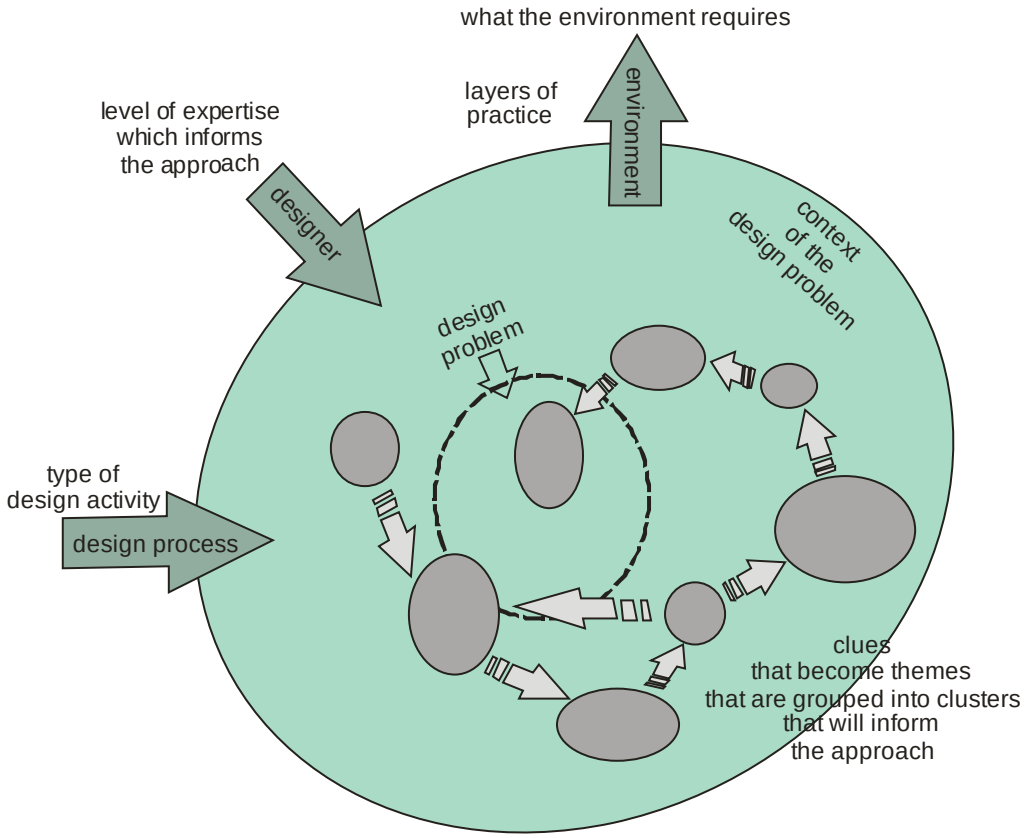


Figure 5.2: Where design takes place
(developed by author)

What should to be noted in Figure 5.2, is that the activities are not numbered step one, step two and so forth, which indicates that an 'entry point' into the design problem can be anywhere. Neither is there a sequential flow, yet Dorst (2011:527-528) argues that design is a deliberate process even though it might seem random and illogical to the observer. It is in the above intricate scenario that the design of fashion lies and where solutions for the complex problem of environmentally sustainable fashion need to be sought.

According to Fletcher and Grose (2012:85-87) a new paradigm involves building a relationship into a product that is based on empathy, which in itself has no significance but over time could lead to an imperative change in culture and social behaviour (Smal, 2014). The notion of empathy is worth expanding on briefly. The *Oxford Advanced Learner dictionary* (2005:478) defines empathy as the ability to understand the other's feelings and experiences of something. The constructs empathy and design are not new; Chapman (2005:18) in 2005 identified the human need for empathy through design, and suggests that emotionally durable objects should be designed for empathy, and that in order for environmental sustainability to be taken seriously, the notion of empathy through design becomes important (Chapman, 2005:22-25). Fletcher (2012) however, argues that – specifically in fashion 'emotion' (and empathy) is user-centred and not product-centred. Therefore, the user determines the

emotionally value of a fashion product.[57] The construct, empathic design, developed from a need to explore new approaches to design which deal with emotions and experiences that need to inform innovative solutions. Empathic design has its roots in design practice and focusses on life experiences and emotions in human activities, from which to formulate inspiration (Mattelmäki, Vaajakallio & Koskinen, 2014:67).[58] If one views design through a lens of empathy, a shift from design *for* the other, to design *with* the other, occurs.

Fletcher and Grose's (2012) idea relates to Ehrenfeld's (2008) notion of having and being.[59] According to the authors (Fletcher & Grose, 2012:136), having leads to wanting which feeds business models that are based on material consumption. Fletcher and Grose (2012:136-140) insert *doing* into the discussion, and refer to design as being at the point of change. The point of change is where, according to Fletcher and Grose (2012:155): "…larger ecological, socio-cultural and economic forces are causing [a] re-examination of both design's prevalent value systems and the places where design skills are traditionally applied". The result is that designers need to explore potential paths of transforming and changing mainstream thinking in manufacturing and consumption (Smal, 2014). The danger is that design has become so specialised that adaptability is difficult. Sustainability specifically needs adaptability and change from traditional (design) thinking and boundaries to lead systemic change and thus environmental sustainability requires that one becomes more engaged in culture and society (Fletcher & Grose, 2012:155-156; Smal, 2014).

The above description of solving the design problem needs to be applied to fashion design, thus the following sub-section describes the fashion design activity and designer in more detail. The following sub-section therefore explores the role of the fashion designer by firstly examining design and designer and secondly by looking at fashion design and the designer in detail. The objective of this enquiry is to establish what a possible paradigm shift in fashion design could entail.

[57] Fletcher (2012) aligns emotion to durability in a project titled: *Local wisdom.*
[58] The authors are design researchers of a design research programme in empathic design.
[59] Ehrenfeld's theory of being is discussed in Chapter 2.

5.2 ENVIRONMENTALLY SUSTAINABLE FASHION DESIGN PRAXIS

> ..the challenge of sustainability – that is, of integrating human well-being and natural integrity – is such that we can't go on as before. Business as usual or, more to the point, fashion as usual, is not an option. So what should we do instead?
>
> (Fletcher, 2008:xii)

In this section fashion design praxis is discussed by exploring the process of fashion design in order to explore design-driven environmentally sustainable fashion design praxis. This is achieved by firstly discussing the design process in fashion design in detail. Secondly, the design process and the designer in environmentally sustainable fashion design, is discussed. The section culminates with a suggested paradigm shift that is needed for effective environmentally sustainable fashion praxis.

5.2.1 The design process in fashion design

In order to understand environmentally sustainable fashion design praxis, the process of fashion design needs to be explained in more detail. The literature on fashion design and the fashion design process very often does not focus on design *per se*, but views design from a marketing point of view. In these (older) texts, the person (designer), the process (design) and the end result (designed goods) are part of the product development process where the design activity is described as an inconsequential step in the development of a product. In a personal reflection, the difference between the design process and product development needs to be mentioned. Design, as discussed in 5.1, is the result of design thinking that leads problem solving from a holistic approach. Product development, although often conflated with design, is the process of action-oriented, technically based processes. The two terms are not opposing constructs; however, design can lead to product development, yet product development (alone) does not necessarily include the act of designing.[60] Solving complex problems requires design process and it is only recently that the design process of product development in fashion design is being explored.

Greenberg Ellinwood (2011) and Bye (2010) both describe design-as-process in much detail. Greenberg Ellinwood (2011:1-4) divides the design into *product*, a tangible visual solution that integrates materials and function, and *design process*.

[60] The clarification of the terms design and product development is the author's viewpoint.

Greenberg Ellinwood (2011:1) argues:

> The term [fashion] design refers to both product and process. As product [fashion] design is a tangible visual solution, an organism of an idea of a visual nature that also integrates materials and function . . . . Fashion is more often the application of creative thought to clothing where aesthetic execution is valued over function . . . design is the result of the organisation and arrangement of parts into a final form.

According to the author, fashion design is divided into three areas, namely aesthetics, structure and function, as illustrated in Figure 5.3 (Greenberg Ellinwood, 2011:5-18; Smal, 2014).

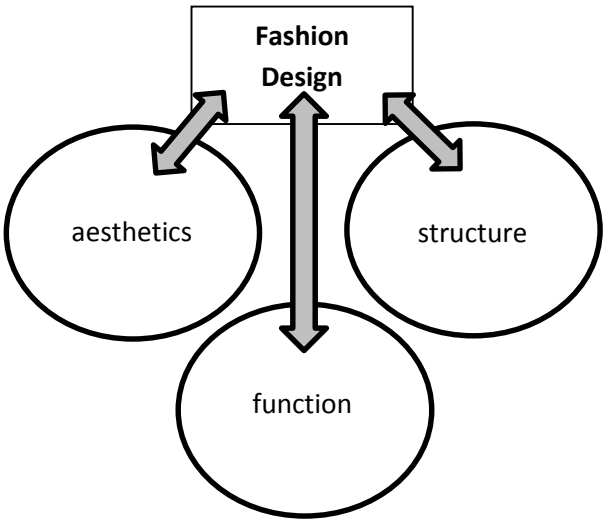


Figure 5.3: The fashion design process
(based on Greenberg Ellinwood, 2011)

In fashion design, the aesthetic evaluation of a design is achieved by evaluating the elements (line, shape, form, space, texture, light, pattern) and principles (balance, emphasis, rhythm, proportion, unity) of design. Structural design refers to that which gives form and shape (pattern development and construction) to the designed object. Functional design is the way in which the design performs physically and includes aspects such as: how to get into the garment (for example, a zip), or the function of a structure (for example, a pocket). Fashion designers are constantly evaluating fashion designs, their own and those of other designers, by looking for conformity in silhouette, the fabrics that are used, the colours, the similarity of looks in a collection and the detail on the garments. Greenberg Ellinwood (2011:2) describes the design process as several ideas from a person or various role players in the design team that culminate in the final product or line. She divides the design process into nine stages as explained in Table 5.2.

Table 5.2: The design process in developing a fashion product
(Greenberg Ellinwood, 2011)

STAGE		DESCRIPTION
1	**Problem identification**	Defining and clarifying the problem. Identifying a category of product, end-user and season.
2	**Research**	Examining the influences on the design problem. Researching fabric and colour trends. Finding sources of inspiration
3	**Ideation**	Determining alternate solutions. The process of design loops and first designs are very often not optimal. Final choices are made.
4	**Constraint identification**	Considering the limitations built into the problem. Limitations could include cost, time and/or resources.
5	**Selection**	Choosing the best option(s), based on the research and in consideration of the alternate solutions created.
6	**Implementation**	Solving the problem by giving form to the design. This step includes pattern development and sampling.
7	**Evaluation**	Examining the solution in relation to fit, workmanship, aesthetics, appearance and cost.
8	**Refinement**	Reacting to the solution and effecting necessary changes.
9	**Presentation**	Selling the solution. Presenting the new line/collection to potential buyers

The objective of presentation (stage nine) is to get orders for the collection. At this stage, garments in the collection that are not profit-generating might be dropped from the collection (Bye, 2010:46-47). Once final orders are known, production patterns are made, graded to the required size range and the layout for cutting planned. The above activities are referred to as the pre-production stage. The fashion design process, from stage one to stage nine, needs to be completed by a fashion designer within the context of environmentally sustainable fashion.

5.2.2 Design and designer in environmentally sustainable fashion design

In order to determine the role of the designer in the development of environmentally sustainable fashion design, this sub-section reviews Fletcher and Grose's (2012) explanation of the above. Fletcher and Grose (2012:33) mention that it is easy for designers to leave the technical knowledge of processes, for example – ethical resourcing, to experts who are not necessarily design experts, and to tend to remove themselves from interacting with these processes. Therefore the apparent disjuncture between design and product development appears as 'intellectual timidity', which could potentially widen the knowledge gap and could hinder designers from taking responsibility (Fletcher & Grose, 2012:33, Smal, 2014). The result thereof is that designers, in the development of sustainable fashion, wait for government, legislation or consumer response to dictate what needs to change instead of engaging in a

process of design-led innovation (Smal, 2014).[61] Fletcher and Grose (2012) further mention that design, because it is positioned at the beginning of the manufacturing process, can create positive feedback loops and have a noticeable or dramatic influence on subsequent processes.[62] Ehrenfeld (2008:137) adds to this argument by saying that design can induce reflection and conscious choice and may break down unconscious behaviours, thus design develops from a preventative approach. But for this to become reality, fashion designers need to be actively involved in the technical aspects of product development. It is, therefore, specifically in the development of environmentally sustainable fashion, necessary to emphasise the role of design in fashion product development (Smal, 2014).

Fletcher and Grose (2012) categorise the role that fashion designers could take into four specific categories, namely designer as communicator and educator, as facilitator, as activist and as entrepreneur. The designer as *communicator and educator* is an important aspect of the designer's work, as the designer evidently knows more about sustainability than the consumer and therefore industry (where the designer ultimately functions) needs to lead the consumer (Fletcher & Grose, 2012:157). The authors further argue that one cannot rely only on slogans to communicate change, as this merely leads to poverty in understanding. Therefore, one of design, and thus designers', roles is to build literacy through co-operative enquiry through ways of knowing. They list experiential, presentational, proportional and the practical, as ways of *understanding knowing*. Fletcher and Grose (2012:158) argue that "…knowing is grounded in an experience, expressed through our stories and images, understood through theories and expressed in worthwhile actions". Designers, as communicators and educators, should take abstract information and make it real and effective so that it can trigger new behaviour. An example of the above is the sustainable cotton project in America, where farm tours for participants in the industry (that is manufacturing and retail) explain the intricacies of sustainable organic cotton farming.

For *design(er) as facilitator* Fletcher and Grose (2012:162) suggest that the range of skills required by designers in general are complex and include being comfortable with the unknown, being able to synthesize complex information, being able to work across disciplinary boundaries and being prepared to make intuitive cognitive leaps and decisions. It is specifically the above that places the designer in a leading position to affect change for sustainable design. Currently, traditional design practices, such as sketching and producing prototypes, need to expand the current designing activities differently to evoke, envision, organise and enable change and behaviour. This adds to Fuad-Luke's (2009:188) argument that "…sustainability

[61] I argue a design-led viewpoint for environmentally sustainable fashion in an article published in 2008 (Smal, 2008).

[62] This was presented at the Cumulus: design for the other 90 percent conference in September 2014 (Smal, 2014).

demands that we care for the present much more than the future". Fletcher and Grose (2012:162) see this as the designer developing strategies that favour process over outcome and "…[frame] 'success' on group effort rather than isolated brilliance". An example that supports this approach is co-design, where design becomes the catalyst for group discussion and interaction.

The *design(er) as activist* places emphasis on corporate social responsibility (Fletcher & Grose, 2012:168-173). According to Fuad-Luke (2009:2), it is the specific ability of design and designers to work across boundaries and levels that makes them suited to work with issues such as environmental sustainability. Activists are lobbyists for change who favour a particular worldview, as activism is about "…taking actions to catalyse, encourage or bring about change, in order to elicit social, cultural and/or political transformations" (Fuad-Luke, 2009:6). He further argues that design activism aims at developing outcomes that elicit positive change in a real-life situation (Fuad-Luke, 2009:84-85). Therefore, as Fletcher and Grose (2012:1612) propose, in activist design, emphasis is placed on designing for social good.

The last, *design(er) as entrepreneur,* requires thinking and functioning outside of normal business models. As Fletcher and Grose (2012:174) suggest, working within generally accepted business models often hinders a progressive move towards environmental sustainability. They argue that designers need to develop a will and a confidence to work outside of the accepted frameworks. An interesting example is Bedlam Boudoir,[63] a British company whose low impact solutions for manufacturing are powered by 12V batteries charged by wind generators and solar panels (Fletcher & Grose, 2012:176). If one applies Fletcher's four roles of designer/design activity, and places these in the context of Dorst's level of expertise (Table 5.1) and the complexity of design (Figure 5.2), the role of design becomes evident, as illustrated in Figure 5.4.

[63] Refer to Chapter 4, under section 4.3.1, Figure 4.6.

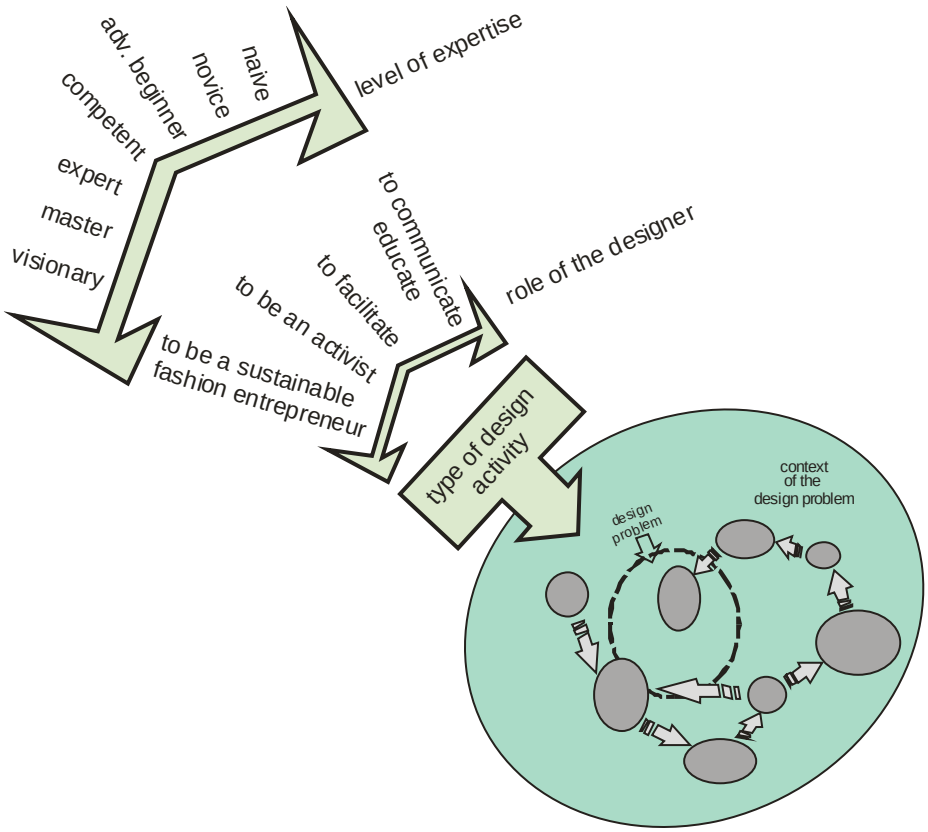


Figure 5.4: Where fashion design takes place
(developed by the author)

The above figure implies that not only does the context of the design problem need to be resolved, but the expertise of the design and the role the designer assumes, will be deciding factors in determining what type of activity needs to be applied in order to solve the problem. Armstrong and LeHew (2011) make a strong argument for a paradigm shift in design thinking in order to have meaningful impact in the development of sustainable fashion.

5.2.3 A new paradigm

> Fashion at its creative best is one of the most powerful and direct expressions of personal aspirations, individuality and belonging. But the fashion industry also contributes to environmental and social degradation through pervasive advertising and short-term trends manipulating and exploiting people's innate needs for integration and differentiation, in order to drive fast retail cycles and ever-increasing growth in commercial production.
>
> (Fletcher & Grose, 2012:138)

In this sub-section, the paradigm shift suggested above is discussed in order to develop a framework in which to locate the role of fashion design and the fashion designer in developing sustainable fashion design. Armstrong and LeHew (2011:31) mention that if all designers were insightful and understanding of environmentally sustainable design principles, "...fashion could prove a powerful conduit in the transition to environmentally friendly and socially responsible production and consumption [of fashion]". Decisions designers make have an impact on

materials used, production processes, lifecycle and the cost of the product. Armstrong and LeHew (2011) argue that the industry is inherently at odds with sustainability, which poses an interesting and unique set of challenges for fashion designers. They compare various approaches, strategies and tools developed by prominent authors in the broader design discipline, and compare these to current practice in fashion design and manufacture, in order to find possible best practice scenarios. According to them, a new paradigm has to be developed that focuses on efficient use of resources, effective practices and consumer utility, while conscientiously considering the needs of the consumer, and all of the above in relation to a holistic approach to environmental sustainability (Armstrong & LeHew, 2011:56; Smal, 2014). Currently, approaches towards sustainability are primarily organised into two categories, those that "...permit the consumer to maintain traditional consumption habits and those that require a transformation in consumer culture" (Armstrong & LeHew, 2011:41; Smal, 2014).

Figure 5.5 is an attempt to visualise the paradigm shift that Armstrong and LeHew suggest. The diagram notes the approach, the strategy and the tools that need to be applied to the four levels of environmental sustainability intervention (Armstrong & LeHew, 2011).

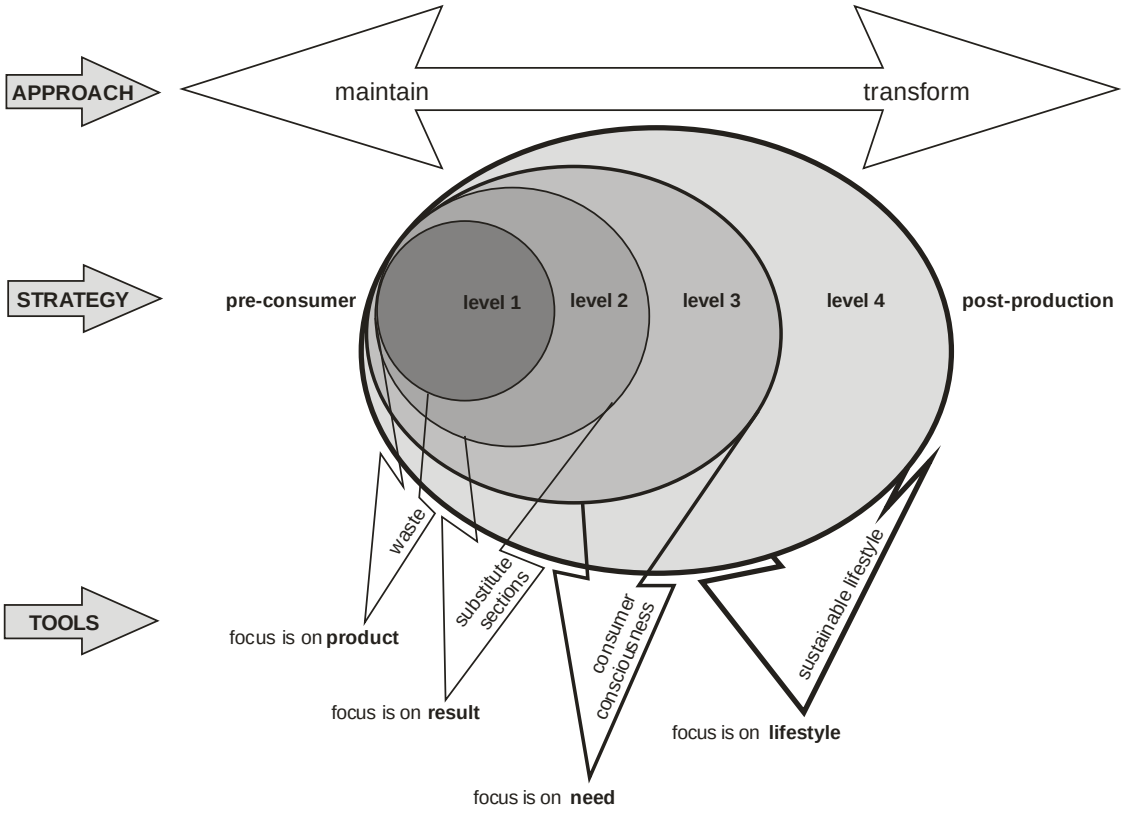


Figure 5.5: A suggested paradigm
(developed by author, based on Armstrong & LeHew, 2011)

The above diagram is further explained by considering each of the levels (Armstrong & LeHew, 2011; Smal, 2012; Smal, 2014). One position of the continuum is – *maintain* – and is mainly

concerned with pre-consumer processes where the consumer maintains traditional consumption practices. The designer's decision centres around impact on the environment through efficiency in manufacturing, use and effective disposal of the product. In level one the emphasis is placed on ways to improve the product within sound and positive environmental practices. End-of-pipeline strategies focus primarily on tangible aspects in waste reduction, or addressing waste-use in the production-to-consumption cycle. Considered practices are: alternate use of energy, reduction in the use of energy, alternate disposal of waste and lastly, alternate processes.

Level two considers substituting parts within processes and products with more efficient, sustainable solutions and therefore builds on level one. The issues that are considered are, as in level one, very tangible. The result is a product that improves normal production processes with regard to environmental impact and therefore is more acceptable to the consumer. Considered practices are predominantly based on Life Cycle Assessment (LCA) practices,[64] which include inventory analysis, impact analysis and improvement analysis. In the production of volume clothing, these practices impact on material and component selection, application of materials and components, production process, distribution of the products by the manufacturer and use and disposal of the product by the consumer. Design decisions influence all of the above. Level one and two engage product, process and system and are crucial in developing sustainable eco-products but have no or very little direct influence on the consumer, as the consumer is not necessarily knowledgeable or concerned with these processes or systems. Design strategies that are applicable here are *design for the environment* and *design for strategy X*, such as 'design for disassembly'.[65]

On the opposing side of the continuum is *transformation.* Level three, consumer consciousness, moves towards *transformation*, and builds on level one and two and the methods contained within it. The objective in this level is to minimise environmental impact through careful product and process planning, but also to develop a product or process that adds value. Level four, environmentally sustainable lifestyle, requires that design leads consumer, accentuating environmentally sustainable lifestyles in conjunction with an environmentally sustainable focus on products and systems. The result of such an approach is a broad view of all issues, thereby considering tangible and intangible aspects as well as adding value up-stream (pre-consumer) and down-stream (post-consumer) (Armstrong & LeHew, 2011; Smal, 2012). Level four can therefore not be seen in isolation but as an

[64] Definition of LCA: LCA tracks environmental impact from raw material through to disposal and is a tool used to minimize harmful components and or practices (Esty & Winston, 2009:169). Some authors, such as Fuad-Luke (2009) refer to LCA as life cycle analysis.

[65] Design for disassembly is discussed in Chapter 2.

extension from the previous levels, thus, it not only ensures minimising environmental impact through product, process and system, but considers environmental well-being. In this approach, design can, through empathy, activate change.

Armstrong and LeHew (2011) provide commonalities as well as points of divergence between fashion design and product development, on the one hand sustainable fashion design, and product development on the other, as illustrated in Table 5.3

Table 5.3: Commonalities and differences between fashion design and sustainable fashion design (based on Armstrong and LeHew, 2011)

		Fashion design and fashion product development	**Environmentally sustainable fashion design and environmentally sustainable fashion product development**
Commonalities		Originate from similar disciplines	
		Rely on collaboration	
		Have concurrent and iterative activities	
		Rely heavily on technology	
		End in a process and a product, form fits function	
Points of divergence	**Costing**	Selling at market price	Having a higher cost if ecological costs added
		Trading intervention often drives prices down, environmental costs are ignored.	Number of manufacturers have changed their costing policies to include and better reflect the real cost of production
		Concentrating on the cost the retailer is willing to pay	Above is more important than what the retailer is willing to pay, but rather considers business in social and environmental terms.
	Partner-ships	Relying heavily on partnering with stakeholders	Might require partnering with stakeholders outside the 'normal' fields (for example, using regained fibres.
		Encouraging multi-disciplinary approach	Requiring interdisciplinary/trans-disciplinary approach
	Process	Using specific process	Requiring sustainable design and manufacturing approaches
	Belief system	Developing products that respond only to market needs	Developing products that respond to market and environmental needs

Fletcher and Grose (2012:85-87; 136-140) mention several methods to influence consumer decision making as part of an alternate approach to design, and argue that a change in culture, social behaviour and business practices remains imperative. It requires a move from a consumption dependency to providing enabling actions (doing) to inform the consumer on environmental sustainability. The authors base this on Maxneef's hierarchy of needs. Having leads to wanting and requires business models that supply those needs and wants, and are therefore based on material consumption. On the other hand, spiral dynamics, which aligns to Ehrenfeld's (2008) notion of flourishing, could result in improved, conscious and responsible

design, aimed at the creation of healthy societies and environments.[66] According to Fletcher and Grose (2012), designers have an ability to develop ways for the mainstream public to relate and to fit sustainability into their everyday lives as well as a mind-set that redirects the attention from what is bought to how people behave.

5.3 SUMMARY AND DISCUSSION

The purpose of this chapter was to explore environmentally sustainable fashion design praxis. This was achieved through in three steps, namely, by reviewing design theory, design thinking and design activity, as presented by selected authors. Nelson and Stolterman (2012) suggest that the designer acts comprehensively and inclusively, and that a holistic design approach is achieved through purposively ordering and organising elements through intentional relations and connections (Nelson & Stolterman, 2012:93-102). Dorst (2011) argues that how one approaches a situation, the role one takes in the design problem, the coalitions one works within and the method in which one deals with the stakeholders of the project, all form part of the created operational environment of the designer. The level of expertise of the designer, and the three layers of practice have an impact on how a design problem should be solved. The survey of scholarly work emphasized that design is the inflection-point that can action the desired outcome, thus design-action can inculcate change.

The second step, namely exploring the role of fashion design and the fashion designer, was engaged with by reviewing selected work, in order to inform the role of design and the designer in environmentally sustainable fashion design praxis. Four roles of design and designer for environmentally sustainable design emerged. The first, designer as facilitator, requires that design should lead consumer. The second role, design as communicator and educator, suggests that designers move away from the traditional approach of fashion design, so that design can elicit change of behaviour. The third role of design, designer as activist, places emphasis on design for social good, and the last role, the designer as entrepreneur, requires the designer to explore alternate approaches in the business of fashion design.

Lastly, the third step explored the suggested paradigm shift for implementing sustainable fashion design, which focuses on efficient use of resources, effective practices and considering the needs of the consumer from a holistic approach to environmental sustainability. The challenges for sustainable design in fashion are profound but that they require a vision that is qualitatively different from current practice in the fashion industry – minimising unsustainable processes, products and consumer behaviour (Fletcher & Grose, 2012:180-181).

[66] Spiral dynamics is discussed in Chapter 3, under section 3.2.1.1.

Fletcher and Grose (2012:180-181) end their text with suggestions on possible activities and opportunities for fashion designers with regards to environmentally sustainable design, and these can be summarised into three categories, namely, approach to design, approach to business and knowledge.

i. *Approach to design:*

   Fashion should be impact-driven and not trend-led, and design, and thus designers, should be the drivers of change. Designers need to re-think the use of components, and as raw materials become scarcer, alternate materials need to be developed or sourced. Designers will have to become strategists.

ii. *Approach to business:*

   The mode of production needs to change and thus a different approach to business must develop. Fashion products and services will have to adapt, and approaches to regional conditions and systems need to be explored. Commerce will remain the driver, but success will need to embody social, cultural and environmental value.

iii. *Knowledge:*

   Designers will have to engage with the technical aspects of the discipline and to become strategists who have to engage with current business trends, the local economy and policy. Design education facilities will have to re-think current practices in fashion design education.

Chapter 3, Chapter 4 and Chapter 5 collectively inform the development of the conceptual framework used in the case study and thereby achieve Objective 5 of Sub-question 3. The development of the conceptual framework is discussed in Chapter 6.

CHAPTER 6

CASE STUDY RESEARCH STRATEGY:

UNFOLDING THE PROCESS

The primary goal of using this [qualitative] approach is defined as describing and understanding (Verstehen*)* rather than explaining human behaviour.

(Babbie & Mouton, 2003:270)

How the research strategy (presented in Chapter 2) is applied in this research, is documented in Chapter 6.The purpose of this chapter is therefore to expand on the research strategy discussed in Chapter 2, as presented in Figure 6.1.

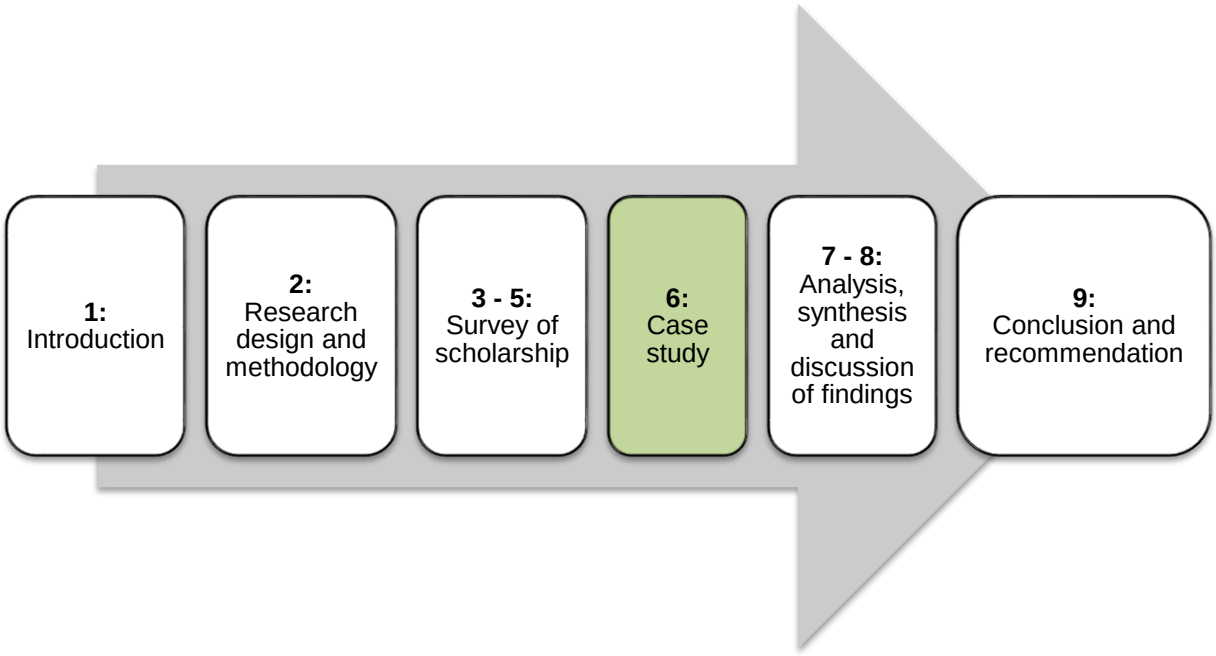


Figure 6.1: Schematic representation of case study – applied case study research strategy (developed by author)

The strategy applied is to describe the research process as it unfolded. This includes the development of the conceptual framework, the application thereof in the case study and the analytical approaches undertaken to analyse the data. The intention of this chapter is to develop a framework in which to present the findings. The chapter starts with providing a brief overview of the process followed for data collection and analysis, then proceeds to describe the development of the conceptual frameworks that inform the data collection and data analysis. The case study participating sub-units are discussed with specific reference to the interview process. The chapter then presents the process of data collection and analytical strategies and techniques applied to the collected data. The chapter concludes with a summary and discussion of key points.

6.1 THE PROCESS

The process, from expanding the conceptual framework to analysing and the data and presenting and discussing the findings, is depicted in Figure 6.2.

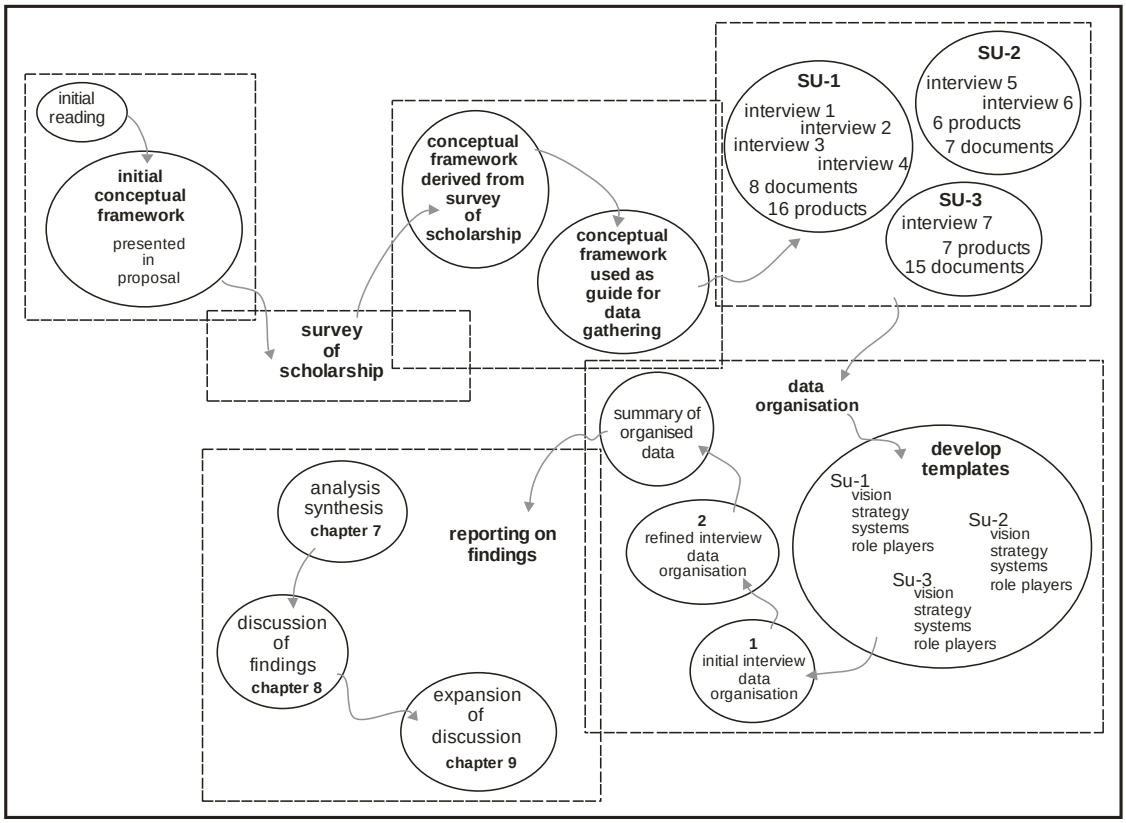


Figure 6.2 Process of data collection, data organisation and data analysis (developed by the author)

The figure presents how the conceptual framework used for data collection was developed, how it was refined and how the conceptual framework was used in data organisation, analysis and synthesis, and the reporting on the findings. A brief overview of the process is presented below.

The initial conceptual framework developed for the proposal was derived from initial reading. The purpose of the initial conceptual framework was to guide the reading for the survey of scholarship of the study. The survey of scholarship resulted in three chapters namely, Chapter 3, Chapter 4 and Chapter 5. Re-occurring key phrases found in all three of the survey of scholarship chapters populated and expanded the conceptual framework (Appendix B and C). To facilitate data collection, the conceptual framework was refined to include key words, and was used as a tool by the researcher to guide data collection (Appendix D).

Once the data had been transcribed, the conceptual framework (Appendix C) was used to develop templates for organising the raw data from the interview transcripts (Table 6.6). The four templates (Appendix G) were developed to align to the four layers of the conceptual framework namely, vision, strategy, systems and role players. The population of the templates with the raw data resulted in twenty eight populated templates which are referred to as primary data organisation.

Data refinement concluded in three steps namely, organising the raw transcript data, refining the primary organised data (Table 6.6 and Table 6.7) and summarising the refined data (Table 6.9).[67] The summarised data templates informed the analysis and synthesis discussed in Chapter 7. Chapter 8 presents the discussion of the findings of the analysis, and Chapter 9 furthers the discussion of key aspects discussed in Chapter 8. The explanation of the process presented in Figure 6.2 is interwoven in the narrative of Chapter 6 and is supported by Appendices. The reason for, and use of, the conceptual framework is discussed next.

6.2 CONCEPTUAL FRAMEWORK

In this section the development of the conceptual framework is discussed in order to provide a platform for the raw data that was collected and analysed. Corbin and Straus (2008:125-127) argue that a conceptual framework needs to grow and develop as the research progresses. Therefore the conceptual framework for this research developed in three stages: the initial framework, the expansion and refinement of the extensive survey of scholarship according to the initial suggested line of enquiry and the key constructs and the final framework that guided data collection.

The initial conceptual framework was developed as part of the development of the proposal as described in Chapter 2, under section 2.3.1.1. The conceptual framework consisted of three areas for consideration, namely economic viability, resources and eco-practices, with four layers namely, vision, strategy, systems and role players, forming the base of the framework. As presented in Figure 2.5, the vision informs the strategy which is enabled through systems and involves role players.[68]

The extensive survey of scholarship, presented in Chapters 3, 4 and 5, informed the expansion and refinement of the conceptual framework, as presented in Appendix B.[69] As part of conceptualising the case study research for the development of the proposal, an initial guideline of inquiry was established. The main headings for this inquiry were:

i. Gaining a common understanding of terminology and finding common definitions for environmental sustainability in the field.
ii. Determining eco-philosophy and strategy of the unit and decisions that led to its development and implementation.
iii. Determining the eco-practices of the unit with regard to design, manufacture and distribution.

[67] The organised, refined and summarised data documents are in possession of the researcher in a secure location. Refer to Appendix H.
[68] Refer to Figure 2.5, Chapter 2, Section 2.3.1.1.
[69] Refer to Appendix B for the complete document.

iv. Determining the management and auditing processes of all resources, physical and human.
v. Understanding the economic viability of environmental sustainability in the unit and as a future focus for the fashion industry in South Africa.

This line of inquiry was used to narrow the information from the three chapters of the survey of scholarship into a manageable format.

In order to use the framework effectively during data collection and to align to the initial framework suggested in the proposal, the framework was refined. The structure of the refined framework was based on the levels identified in the first conceptual framework, namely, vision, strategy, system, role players and areas – resources, eco-practices and economic viability. The refined design-driven framework is provided in Appendix C.[70] The conceptual framework was further refined to present only key words and is referred to as the guide for data collection. The guide for data collection includes layers developed in the initial framework and key words from the refined framework. The use of the flower, as portrayed in Appendix D, symbolises nature and thus is a metaphor for environmental sustainability. The refined conceptual framework was used as a point of reference during all the semi-structured interviews, and was used as a guide by the researcher for making notes or adding observations during or after the interviews. The refined conceptual framework (Appendix D) was additionally used as the point of reference in the analysis of documents and products, as described in Section 6.5.1 of this chapter. The process of obtaining data is discussed in the next section.

6.3 DATA COLLECTION

In this section the data collection is discussed by reviewing the process followed with the interviews, as well as the documents and products reviewed, in order to prepare the raw data for analysis. The section is organised by providing information on case study participants and the interview process, how the raw data were coded to ensure anonymity and how the process of data collection unfolded.

6.3.1 Case study participants

As this research entailed an investigation into specific sub-units as discussed in Chapter 2, Section 2.3.1, voluntary participation had to be obtained on two levels. Firstly, the company had to agree to participate, and secondly, in the two larger sub-units, individual participation,

[70] Refer to Appendix C for the complete document.

other than the owner, needed to be obtained. The process for obtaining participation was as follows.

i. Initial contact

Initial contact was with the owner of the company. In each case, initial contact was at the stage of proposal development and confirmation of willingness to participate was obtained via email. (All correspondence is held with the researcher and will only be released if the company grants written permission for this to occur.)

ii. Semi-structured Interviews

For data collection, contact was made with the owner of each participating sub-unit via email. The email contained a brief explanation of the project and all ethics documents were attached, in order to allow the unit to make an informed decision. Once permission was obtained, a date and place for the interview(s) was set and is indicated in Table 6.1. Owners of sub-units 1 and 2 were asked to identify additional staff members to be interviewed.

Table 6.1: Interaction with sub-units
(developed by author)

UNIT	MEETING DATE	OBJECTIVE	POSITION	CODING
UNIT 1	9 December 2013	Initial meeting to discuss study	Owner Operational Manager	n/a
	13 December 2013	Interview 1	Owner	Participant 1
		Interview 2	Operational Manager	Participant 2
		Interview 3	Designer	Participant 3
		Interview 4	Designer	Participant 4
UNIT 2	13 November 2013	Interview 1	Owner	Participant 5
	9 December 2013	Interview 2	Designer	Participant 6
UNIT 3	31 October 2013	Interview 1	Owner/Designer	Participant 7

Table 6.2 provides an overview of the seven interviews held.

Table 6.2: Balance of interviews between participating sub-units
(developed by author)

Sub-unit 1		Sub-unit 2		Sub-unit 3
Interviews with management	2	Interviews with management	1	Owner is both manger and designer
Interviews with designers	2	Interviews with designers	1	

Extensive semi-structured interviews were held with each sub-unit on the business premises of each of the sub-units. The tour of each facility was permitted after the interviews. At the start of each interview the participant was informed of the recording devices being used, the objective of the conceptual framework was discussed and the process to be followed was explained. Before the interview commenced the participant was again given the information leaflet and was asked to sign the consent form.

Merriam (2009:217) mentions that one of the strategies for credibility is to rule out the possibility of misrepresentation or misinterpretation by the researcher, and this is referred to as respondent validation. The research focusses on individual companies and their operations and therefore each company owner needed to consent to the information obtained during the interviews. All final transcripts were sent to the units for approval and on occasions for verification of specific data. All signed documents are filed physically and electronically and will be stored for a period of three years in a secure location determined by the researcher, commencing on the date of acceptance of this qualification.

6.3.2 Interviews, documents and products

The case study database, summarised in Table 6.3 and expanded in Appendix E, reflects the interviews held, information received from the sub-units, the documents sourced and all the products reviewed. The rational for each of the data sets is described in Table 2.1,[71] and includes the data collection set, the participants and the data obtained from the particular data set.

Table 6.3 Summary of data collected
(developed by author)

Data collection method	Data obtained
Semi-structured interviews	7 interviews held
Document analysis	32 supporting documents reviewed
Product analysis	28 supporting products reviewed Reflecting fashion collections between January 2013 and December 2014. Collections available from the respective sub-unit websites and media.

The case study is retrospective as it allows looking at past and present eco-design practices in all three of the selected units of the case study. The three sub-units that took part in the study resulted in seven interviews held, 32 documents reviewed and 29 products reviewed.

Each participating company was asked for additional documentation and these are recorded in Appendix E. There was almost no official documentation with regard to environmental sustainability, for example, company policy or strategy. All units provided additional information with regard to environmentally sustainable projects they were involved in and information on these projects is available in the public domain. Documents for analysis are primarily sourced from the public domain and included *inter alia* searches and articles published. During the interviews the units discussed various projects they undertook with other parties and

[71] Table 2.1 is in Chapter 2, Section 2.3.3.

information on these projects was also searched on-line. None of these projects warranted further investigation as they merely informed the respective unit's environmentally sustainable practices but did not directly affect design. An example of this is the goat-hair project launched by the Centre for Scientific and Industrial Research (CSIR).[72]

The products viewed from each unit were sourced from the unit's own website, articles and related websites such as South African Fashion Week (SAFW) website, where the products were shown. In addition, popular media, such as Facebook, provided product information for Sub-unit 2, as this seems to be their method of marketing and not the company website which has not been updated for three years. Appendix E provides the rationale for product selection for each sub-unit respectively.[73] As each participant, document and product was coded, the text reveals only the codes. The coding assigned to each set of data is as follows:

i. Each sub-unit was given a number and referred to as 'Sub-unit + number', for example, Sub-unit 1.
ii. For interviews the code 'participant + number' was used, for example, Participant 3.
iii. For documents the code 'document + number' was used, for example, Document 11.
iv. For products the code 'product + number' was used, for example, Product 27.

Appendix F aligns each code to the correct reference.

The strength and weaknesses of the collected data is tabulated in Table 6.4 below.

[72] The CSIR is a South African research institute and is very involved with finding solutions for environmental sustainability in the apparel manufacturing industry in South Africa with regard to cleaner textiles and cleaner production methods. The goat-hair project as a sustainable alternative to cashmere is an example of research undertaken by the CSIR (CSIR, n.d.).

[73] Documents and products are considered evidence that need to support, or not support, the interviews.

Table 6.4: Strength and weaknesses of the data (as suggested by Yin, 2009:102)

Source of evidence	Strengths	Weaknesses
Semi-structured interviews	A clear conceptual framework developed Interviews were targeted at specific participants Questions remained focussed All interviews were insightful Length of discussions were adequate All venues were suitable Interviews were recorded by two devices during the interview All interviews were transcribed verbatim	Occasionally the interviewer gave too much comment during the interview The interviewer stopped taking notes during the interview as this created a disturbance
Documents	Unobtrusive method of data collection Broad coverage of each unit in the case	No official documents were shared. These were deemed sensitive or contained information regarding trade.
Product	Permission was received from each unit. Collections in the public domain were used. Criteria for product selection was informed by the findings Unobtrusive method of data collection Broad coverage of each unit in the case Product deemed insightful with regard to technical aspects	Photographs taken during the interview with unit 3 were not of good quality and could not be used in the thesis.

6.3.3 Transcribing the interviews

The seven interviews were transcribed verbatim personally, taking into consideration pauses in the conversation, repetition of words and style of conversation. Each transcription included technical detail of the interview, the documentation provided by the interviewer at the interview, as well as documentation provided by the interviewee. Coding was assigned to assist with the style of conversation, for example, removing ‘uhm’, repetition of words, repetition of phrases and is presented in Figure 6.3.

Transcription of interview

Sub-unit	2 *Name of company*
Date	11 November 2013
Interviewee	*Name of owner* 2/1 Interview 1 PH Participant 5

Information handed to unit prior to interview:
Documents submitted before the interview (also left at the unit):
Conceptual framework (as per proposal)
Documents at interview:
Information sheet
Conceptual framework (as per proposal)
Conceptual framework – interview guide (A3 sheet)
Notes regarding transcription clean-up:
Removed all conversational filler words such as uhm.
[…] indicates that a filler word is removed. Filler words are not identified as being of importance.
() indicates a repeat of the same word. These words are deemed to be of importance.
Ja changed to yes
Jo'burg changed to Johannesburg
// - indicates a pause in the conversation
Additional documentation:

Document 1	Estethica booklet, British fashion council. Ecologist. Spring/summer 2009. Pages copied are: cover page, 2, 3, 28 & 29.
Document 2	Notes made by interviewee regarding: vision, strategy, system

Figure 6.3: Example of transcription, page 1 – Participant 5
(developed by author)

The final transcripts were sent to the sub-units for approval and verification, and comments made during verification were kept as separate additional data, as some comments revealed interesting additional facts. The transcribed document was returned to the interviewee for comment, additional information and critique of the conversation. Where critique was made, the section was highlighted and treated as additional information supplied. All information on the transcriptions was considered for analysis; the critiqued section therefore added valuable information to the analysis. Merriam (2009:217) notes that a method for ensuring internal validity is by respondent validation and that it becomes a method of limiting misinterpretation by the interviewer. As the case study probed each unit's method of operation, all units were asked to sign-off on the transcription and therefore agreed that it may be used in the research.

6.4 ANALYTICAL STRATEGIES AND TECHNIQUES

In this section the analytical strategy applied in this research is discussed in order to provide a framework for the analysis of the data. In this research, the analytical strategy applied is divided into three steps, namely organising the findings, data refinement and developing new themes, and developing new knowledge.

6.4.1 Organising the data

This sub-section presents the process of organising the data and is divided into data from the interviews, data form the documents reviewed and the data from the products reviewed.

6.4.1.1 Organising the data from the semi-structured interviews

Four templates were developed based on the four levels in the conceptual framework, namely vision, strategy, systems and role players.[74] Key words or key phrases from the conceptual framework were used to populate the templates and each key word or key phrase was explained briefly. For example: The first level, vision, *critical point of differentiation* was a key phrase which was explained briefly by *holistically integrating sustainability throughout the business.* The templates form part of reliability, as these were used for constant reference during the process of data organisation. The content of each interview was viewed from the focus of the template and the data of the interview placed in the relevant area, as Table 6.5 portrays. This process was repeated for each interview, for each of the four templates. In total, for the seven semi-structured interviews conducted, 28 templates with data were generated. In some cases data was applicable to more than one area in a template as well as in more than one template. Care was taken to ensure data saturation.

Table 6.5: Sample extract from vision template, primary data organisation – interview, critical point of differentiation, from interview transcription Participant 1.

Key word or key phrase from conceptual framework	**Brief explanation**	**Line number of the transcription**	**Prompting phrase from interviewer (if needed)**	**Cut from transcription**
Interview guide	**Refined D-D CF**	**Line**	**Interviewer comment**	**Text**
Critical point of differentiation	Holistically integrate sustainability throughout the business	42-45		when we were () considering this brand […] we felt very strongly that it should not be children's wear in the traditional wear sense, it should be adults wear shrunk down for kids, so one immediate decision was we were not going to make kids-like clothing but adult wear for clothing, number 1.
	Environmental consideration embedded in all [?] aspects of operations	46-52		Number 2 – it must have a meaningful brand name, and actually…the artwork had all been planned…it was in fact going to be called *company name*. Then at the very last moment, we () were very worried about the word addict for kids. So half…so the debate was that addict could be perceived as a positive thing, if you're addicted to something good, but obviously the word addict also has a very negative connotation. So we () changed that at the very last moment and we went from *company name* to *company name* and we said that if ever we did another brand, well that brand would become *company name*.

[74] The four templates developed and applied in data organisation are available in Appendix G.

6.4.1.2 Refining the organised data from the interviews

The following techniques were applied in refining data organisation. Firstly, memoing and theorising is suggested by Bernard and Ryan (2010:273) as a technique to record hunches, ideas and observations and should occur right through the process of refining the data. Memoing formed part of the refining data organising process when a specific idea or observation was deemed necessary. These entries were all made in bold green italic text. Secondly, the explanation of the key words and key phrases was highlighted with different colours and applied in the transcription text. Thirdly, phrases that seemed important in the transcription text were also highlighted in bold and fourthly, where a problem was mentioned, for example, *organic fabrics are unobtainable and too expensive;* the text was highlighted in red.

An extract portraying the above is presented in Table 6.6, below:

Table 6.6: Sample extract from strategy template – interview, working from a broad knowledge base, from interview transcription Participant 5.
(developed by author)

Interview guide	Refined D-D CF	Line	Interviewer comment	Text
Working from a broad knowledge base Can lead to inclusive decision making that can lead to sustainable solutions	Strategy for environmental sustainable fashion implementation in practices Material and immaterial decisions	8-10		once we started finding organic fabrics, and things that were less harmful for the planet. That just gave us that direction and focus properly on it. The starting point was the fabric, trying to source natural or organic.
		25-31		When *designer's name* started *company name* back in the mid-nineties. When she did, she was doing bridal wear – was a main focus and special orders and she worked in linens and cottons and hemp - natural fibres, and her dying was always vegetable pigment dying. That was her…she was really nature orientated and that's really stuck with *name of company* since the beginning, and it is something we have always tried to be aware of. You know, there are instances where it is not possible to be completely eco-friendly in the product make-up, but where possible we still try and do that.
		57-65	Ethics at CMT	Obviously you would see straight away if they work from a fair trade point of view, if the basic conditions of work are not in place. You can tell, if there is poor lighting, if staff are locked-up. I know most of the CMT's personally, the owners. If there had been something I would have picked up on it and would have questioned it. I don't think South Africa, especially Johannesburg, the type of CMT's we work with, are small owner-managed. They are low-volume, they are not churning out masses, they're not working their staff like slaves – it's not like that. Everyone I know of is paying minimum wage, the staff have proper breaks, proper lighting, and bathrooms…it's all fair trade conditions.
		147-148		There's also soya that they use. Milk, where I'm not sure how they make a fabric out of it.
		150		I've seen it and felt it, not my ideal.
		152-154		It's a bit slimy. It depends on the make-up of it. But the weave I saw it isn't the right aesthetic for the kind of clothes we're making. So, what other fabrics are there? Hemp is something that I really wish could take off. What else is there? ***Above conversation emphasises company's interest in eco fabric. Structure allows experimentation***

6.4.1.3 Data from the supporting documents

The above-mentioned four templates also informed the supporting data collected from the documents. Some of the documents were in electronic format and thus the above process was done on a manual basis, ensuring that the above processes used in the transcription text were applied similarly. The name of the document and the source is provided in Appendix G. Below (Figure 6.4) is an extract from one of the documents sourced that provides more information regarding a specific type of fabric mentioned by Sub-unit 3.

Indigenous goats to contribute to cashmere industry

A research study by the CSIR Fibres and Textiles group of CSIR Materials Science and Manufacturing has found that the coat of the humble goat has the potential to create and contribute to a viable cashmere industry in South Africa. Cashmere has earned its worldwide popularity in luxury garments owing to its fineness, softness and warmth.

Figure 6.4: Extract from a document - *indigenous goats to contribute to the cashmere industry* (Document 32, n.d).

6.4.1.4 Data from the supporting products

Yin (2009:113) suggests that physical artefacts may be used as data in case study research. Depending on the case, physical artefacts may contribute to and add a broader perspective to the case. In this research the physical artefacts that are analysed are clothing products which are available in the public domain and consist of eco-fashion collections produced between January 2013 and December 2014. The time-span allows for selecting clothing products from two winter and two summer collections for review. A total number of thirty clothing products were used for this analysis. The objective of analysing the clothing products is to confirm or dispute findings, to add explanations to findings and to develop a broader perspective of the case. Appendix E lists all the products that were analysed. An extract of the product analysis is provided in Table 6.7.

Table 6.7: Extract from product analysis
(developed by author)

Pg no	Description of product – actual wording *My description* Organic Natural Natural inspired Un-disclosed/other NB comment	How presented f/show f/shoot o/gar	Date of posting	natural	organic	Un-dyed	Natural dyed	timelessness	Day wear	Evening wear	bridal	lifestyle	p-link
1	UV protective ruffia sun hat, design your own sandals, handwoven African hand basket *Full outfit - summer dress, sandals, bag, hat*	f/shoot	31/10	X					X				Product 21
2	Our one shoulder evening dress in this months Sarie *One shoulder black evening dress published in Sarie (sept 14)*	Snapshot of Sarie ad	?							X			
3	Embrace casual luxury with pure linen from *company name*, Pleated linen sundress *Referral to pure linen, same dress and lay-out as posting 1. 3 phots in total*	f/shoot	30/10	X		X			X				
5	Lovely summer dress	f/show not sure which one	24/10						X				
7	For the beautiful bohemian bride (and also those who enjoy alliteration) *Not sure of associating with word – same letter/sound at the beginning of the word*	o/g studio shot	17/10								X		Product 22

The data discussed above informed data refinement.

6.4.2 Summarising the refined data

Analytical techniques applied in the research are based on Stake's (1995) direct interpretation. According to Stake (1995:74-79) qualitative case studies rely on direct interpretation as a technique that allows the researcher to understand the case so as to attain new meaning. The objective of the analytical approach is, through emic themes, to draw on known patterns and consider new patterns emerging during analysis (Stake, 1995:78; Bernard & Ryan, 2010:100). Of the eight techniques of developing new themes suggested by Bernard and Ryan (2010:57-67), observing repetition, observing similarities and differences and missing data informs the development of new themes. According to Bernard and Ryan (2010:275-279) constant refinement creates more categories and themes to emerge from the research and allows linkages to develop.

Appendix H provides a table of the documents generated in order to facilitate the summary of the data. The refined data were placed on an adapted template for each of the four layers, namely vision, strategy, systems and role players. An extract of such a template is provided in Table 6.8.

Table 6.8: Extract of summary of refinement, Sub-unit 2, Participant 5, Participant 6 (developed by author)

VISION		
	Participant 5 CEO	**Participant 6** Designer 1 of 2 She does lines, the other wedding dresses
Critical point of differentiation	Natural fabrics where possible How they operate, continuously thinking along this approach • First is to source organic materials • Not to waste • To reduce • To re-work old garment products • To use off-cuts and not discard • To re-use waste Last bullet bought back and sold in shop (paper) Also sells woodcraft in shop to help crafter earn a living **Document B1** To produce high quality garments without compromise to design and in doing so have the least harmful impact on the environment	Use natural fabrics Would like to use more in line of organic and ethical sourcing (knowing the background) Manufacturing: • In-house very low-volume production • CMT's – local/SA, small manager-owned, assumed all in good order • One-off – wedding dresses Product made to last – brand identity Durability of product Also offer repair service

Furthermore, refined data from each participant in a particular unit were placed adjacent to each other, aiding comparison between the participants of sub-units and the sub-units with each other. The summary of the refined data informed the findings presented in Chapter 7.

6.5 SUMMARY

The purpose of this chapter was to present the process of data collection and analytical strategies and techniques applied in this research and thus expand on the research strategy discussed in Chapter 2. The strategy applied in this research project was described as the research process unfolded. The first to be discussed was the development and reason for use of the conceptual framework used in this research. The framework was informed by the initial reading for the proposal.[75] The survey of scholarship, which consisted of three chapters, informed the expansion of the framework and subsequent two steps of refinement. The last step resulted in the guide used for data collection. The second aspect that was discussed was the case study participants and the interaction with each sub-unit. The process from initial

[75] This process is discussed in Chapter 2.

contact to verification of the final transcribed interviews was presented. The data that was collected consisted of semi-structured interviews, supporting documentation and supporting analysis of products, and the discussion included the process of transcription, and the rational for document and product selection. Lastly, the analytical strategies applied in the project were presented, and included organising and refining the data as per the conceptual framework. In the next chapter, the findings are presented.

CHAPTER 7

ANALYSIS AND SYNTHESIS:

PRESENTING THE FINDINGS

…the perspectives of different cultural worldviews, and of different academic and professional disciplines, are all shaped by the metadesign of their intensions, aspirations and basic assumptions that inform them

(Wahl & Baxter, 2008:73).

The purpose of this chapter is to present the findings of the analysed and synthesized data from the seven semi-structured interviews held, the data gathered from the supporting documents and supporting products, as presented in Figure 7.1. The intention of Chapter 7 is to present the analysed and synthesized findings as discussed in the summary of data refinement mentioned in Chapter 6, in order to inform the interpretation and discussion of the findings that are presented in Chapter 8.[76]

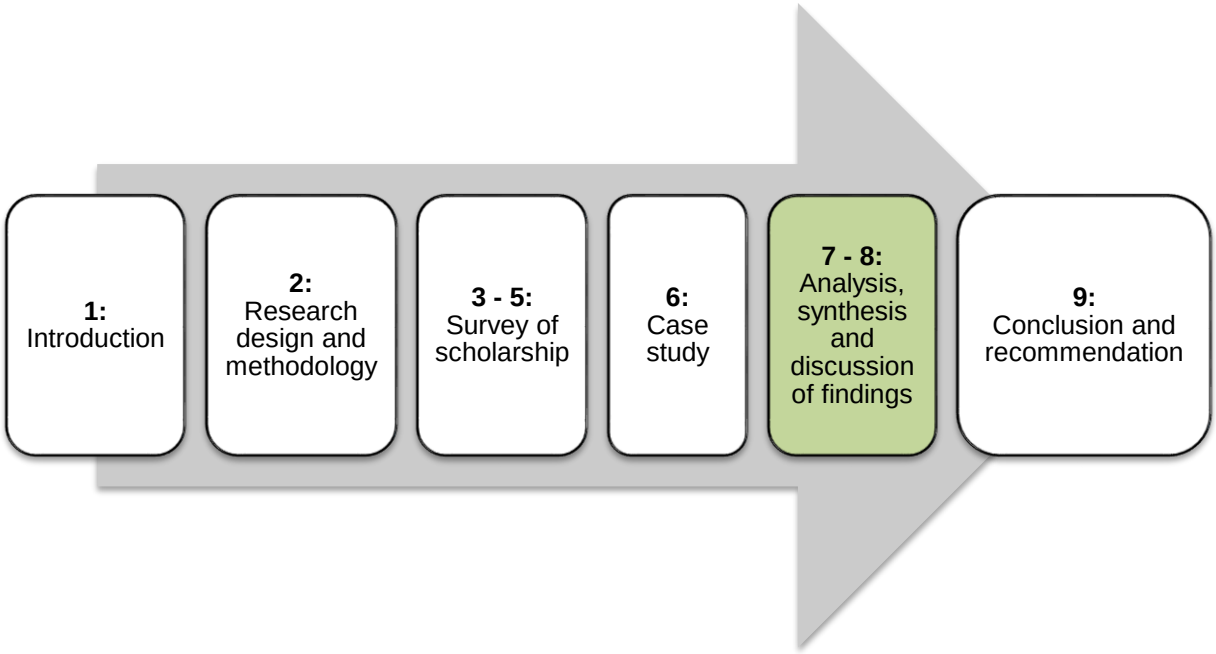


Figure 7.1: Schematic representation of case study – analysis
(developed by author)

The strategy to be followed is firstly to provide contextual background to each sub-unit that formed part of the research. The analysis and synthesis then follows the format of the conceptual framework and is divided into sections that mimic the four layers that inform the framework, namely, vision, strategy, systems and role players. The following key points, as provided in Table 7.1, are used to organise the analysis.

Table 7.1: Headings used for analysis

		Areas of discussion	**Key points for discussion**
Vision of the sub-unit with regard environmental sustainability	1	Environmental lens of business' vision	Broad knowledge base that informs thinking and the approach to business practices
	2	Environmental sustainability differentiation point	Critical point of differentiation
	3	View on environmental advantages	Advantages of environmental sustainability
Strategy for implementation	1	The drivers for environmental sustainability	Drivers of environmental sustainability Critical point of differentiation
	2	The brand and environmental sustainability	Positioning the brand, creating new market space Brand reputation

[76] Refer to Chapter 6, Section 6.4.2.

	3	The target market and creating awareness	Shades of greenness Levels of consciousness
	4	Environmentally sustainable praxis	Environmentally sustainable fashion implementation in praxis/ Practice
	5	Environmental costs	How costs of environmental sustainability impact praxis
	6	Future strategies	Future systems and plans
Systems to assist and ensure implementation of environmental sustainability	1	Establishing partnerships	Links that aid the application of the strategies
	2	Systems in praxis	Product lifecycle and fostering change
	3	Systems in communication	Informing the target market
	4	Design-led systems for change	Changing habit through design

The last section of the conceptual framework, namely, role players, is integrated into the first three sections. The analysis focuses on each of the sub-units as a whole, although individual comments from participants are taken into consideration. All data, namely the interviews, analysis of documents and analysis of products, are integrated. In each section, all sub-units are discussed and a summary is provided before proceeding to the next section. Each sub-unit is therefore discussed by considering what the data reveals with regard to the sub-unit's approach to environmental sustainability (vision), the route the sub-unit uses to apply the vision (strategy), and the way these strategies are achieved (systems). A final summary concludes the chapter.

The technical approach to the information provided in the sections is as follows: information taken from the interviews is cited as required by the CPUT *Research and Harvard method of bibliographic citation: a research writing and style guide for postgraduate students* guide.[77] Where direct remarks from a transcription are used, these are indicated as a direct quote and cited using the code assigned to the participant. As anonymity was guaranteed to all participants, all company names and names of personnel are removed from documents and given the assigned code.[78] Information from documents or the products analysed are cited as specified in the CPUT research writing style guide.

7.1 PROVIDING CONTEXTUAL BACKGROUND TO EACH SUB-UNIT

In this section each sub-unit is briefly introduced by reviewing the key differentiators of each sub-unit in order to provide background information on each. The introduction also serves to contextualise the analysis of the data obtained and provides information regarding:

[77] In addition to the CPUT *Research and the Harvard Method of bibliographic citation: a research writing and style guide for postgraduate students* (2010), the Faculty of Art, Design and Architecture - *FADA reference guide* (2014) was also consulted. CPUT uses an adapted Harvard style method.

[78] Refer to Chapter 6, Table 6.5.

i. the size, location and method of retail of the sub-unit
ii. the focus of the sub-unit's approach to environmental sustainability
iii. key points of interest that define the sub-unit as a business entity.

7.1.1. Sub-unit 1

Sub-unit 1 mentions on its website that it is a leading South African brand with a focus on natural and eco-friendly products. Garments are produced taking environmentally sound processes into consideration and the sub-unit considers itself an organic brand (Document 5, n.d.). In addition to referring to constructs such as high quality, natural fabrics and comfort, the brand specifically refers to producing products inspired by nature (Document 5, n.d.).

Sub-unit 1, whose headquarters are in Cape Town, South Africa, is the largest of the sub-units that form the case study. The sub-unit started as a two-person business entity in 1992, operating as a home industry of a children's clothing label. The sub-unit retailed as a Tupperware model through agents for several years before opening two retail stores, one in Cape Town and the other in Johannesburg in 1997 (Participant 1, 2013).[79] The focus of the retail stores and the children's clothing label was to provide "…adult-looking clothes for kids" (Participant 1, 2013:2). A specific focus was to use the product as a billboard to message statements regarding the importance of looking after the planet, through a specific colour palette, through statements and artworks on the products, and through reflecting the need to care of the planet (Participant 1, 2013:2). Approximately eight years ago, the sub-unit expanded its operations.

Currently, the sub-unit retails throughout South Africa through 43 dedicated retail stores in large shopping malls, which are easily identifiable by the interior design of the retail space and the products sold. The sub-unit offers two distinct clothing labels, one for children and the other for ladies. Initially all products were designed and produced in South Africa but the sub-unit has since moved production to off-shore, primarily Mauritius and Madagascar. The sub-unit has expanded considerably and foresees that in 2015 one million garments would be produced off-shore (Participant 1, 2013:11). The reason for moving production off-shore is indicated as manufacturers and producers of raw materials in these countries "…understood

[79] The Tupperware model was a phrase used by Participant1, and refers to a direct selling retail model that does not consist of a physical retail space. Products are presented by a sales representative of the company to a select group of people.

organic and Fair Trade and were much more educated" (Participant 1, 2013:10). The design room and head office remains in Cape Town.[80]

7.1.2 Sub-unit 2

Sub-unit 2 is a fashion boutique that sells fashion products with a distinct natural look and feel to them.[81] The sub-unit produces ladies-wear products ranging from daywear to evening wear. In addition, the sub-unit designs ready-made and bespoke wedding dresses. The business was established by a duo in the mid-1990s. The focus of the initial company was to source natural fabrics. They subsequently moved to working with organic fabrics when these became available (Participant 5, 2013:2). Participant 5 (2013:2), mentions that at a point products emanating from the sub-unit consisted of approximately 90 percent organic content.

In 2008, Sub-unit 2 was invited to present their work at Estethica, which formed part of the London fashion Week in the United Kingdom and is hosted by the British Fashion Council (Document 10, 2009:29). The focus of Estethica is environmental sustainability in the fashion industry and it aims to showcase the work of leading fashion designers committed to working in environmental sustainability (Document 15, 2014). The focus of the sub-unit was shaped by the participation in the Estethica Fashion Weeks.

Six years later, the sub-unit has had to adapt their approach to environmental sustainability due to the diminishing availability of locally accessible environmentally sustainable fabric. The retail environment of Sub-unit 2 distinctly defines the focus of the business, and their flagship store reflects a natural look and feel. Core to the business is a strong personal belief of the owner and creative director with regard to environmental sustainability. This is also reflected on the sub-unit's website where the site states the business is being "…sensitive towards environmental concerns" (Document 11, n.d.).

The sub-unit has one retail shop in Johannesburg, South Africa, but also produces product for other retailers. The design room and low-volume production room are adjacent to the retail shop. The owner of Sub-unit 2 is also the creative director and the sub-unit employs two designers, one for the ready-to-wear products and one who specialises in wedding dresses.

[80] Recently, news of an imminent sale of Sub-unit 1 to a major retailer in South Africa surfaced (Kew, 2014). If successful, the sale will conclude in the first quarter of 2015 (Mahomed, 2014). At the time of data gathering and writing the imminent sale had not yet been finalised, and thus will not form part of this research study.

[81] 'Look and feel' is a common phrase used in fashion design praxis, which refers to an aesthetic approach and is considered as part of the elements and principles of fashion design (Greenberg Ellinwood, 2011:5). In this regard, 'natural look and feel', refers to emphasis on the natural elements (choice of fabric - feel, choice of structural design - look) that Sub-unit 2 considers their focal point.

7.1.3 Sub-unit 3

Sub-unit 3 started in 2004 with a focus on Africa (Participant 7, 2013:1). The sub-unit website emphasises the connection to Africa (Document 18, n.d.):

> Africa has always been organic, and as a label raised out of the soil of Africa we are committed to using design to help grow our continent and celebrate its time honoured traditions of handicraft.

At the end of 2006, the sub-unit made a shift in focus toward environmental sustainability, which led to experimentation with different types of environmentally sustainable fabrics. Participant 7 (2013:2-3) mentions that using environmentally sustainable fabrics was much easier at that time than it is now, largely because of mills that experimented with various eco-fabrics.[82] At the same time, the CSIR was involved with research in testing the fine down of the South African indigenous 'boer' goat, as an alternative to cashmere. The objective of the project was to establish an agro-industry around the indigenous goats, specifically in poverty stricken areas (Document 25, 2004; Document 26, 2005:1). Projects such as the goat hair project, appeals to Sub-unit 3 as these appear to have social value and add to environmental sustainability, and, as Participant 7 suggests, it as a "…beautiful story to tell" (Participant 7, 2013:2). Sub-unit 3 is a one-person business venture and all manufacturing is outsourced to CMTs in Africa. The label retails locally and internationally through various retails outlets and on-line shopping channels (Participant 7, 2013; Document 18, n.d.; Document 21, n.d.).

The owner of Sub-unit 3 is seen to be a fashion entrepreneur and he showcases his work on all the major fashion platforms in South Africa, such as SAFW and Design Indaba. In addition to being a well-known South African fashion designer, the owner of Sub-unit 3 has been recognized for his contribution to the creative industries, has been selected as one of 50 City Shapers of Johannesburg, and has been appointed as part of the city of Johannesburg's Growth and Development Strategy 2040 (Document 18, n.d.).

This section aimed at contextualising each of the three sub-units that form part of the case study. In the next section, the analysis of the data collected is provided

7.2 DESCRIBING THE VISION

In this section the data gathered with regard to vision is analysed in order to comprehend all the sub-units' visions for implementing environmental sustainability; therefore the vision of each sub-unit is discussed. The discussion on vision consists of three areas of consideration,

[82] Team Puma, a subsidiary of Gelvenor Textiles in Kwa-Zulu Natal, was one of the mills at the forefront of developing environmentally sustainable fabrics. Gelvenor Textiles decided to stop the production of Quantec, a hundred percent polyamide fibre, due to imports and cheaper fabric alternatives (Gelvenor Textiles, 2014).

namely, the environmental lens of each sub-unit, the areas of environmentally sustainable differentiation, and each sub-unit's view on environmental advantages. The section concludes with a summary of the vision of all three sub-units, and a diagram is developed that summarises the information.

7.2.1 Vision of Sub-unit 1

7.2.1.1 Environmental lens of the vision of the business

The environmental approach of Sub-unit 1 is two-fold: firstly, that which influences environmentally sustainable business practices and thinking, and secondly, how the influences relate to specific business practices. Both the above are founded in social responsibility and an ethical view point and thus environmental sustainability is an aspect of a larger broad-based approach. From the onset the sub-unit, then only producing children's wear, was established with a fundamental requirement – that of ensuring the brand had a meaningful brand name (Participant 1, 2013:3), and it seems that this need for 'meaningfulness' has been a core value throughout. This meaningfulness also led to the children's wear label being used as a billboard to educate the consumer, thus adding meaning to the product. This was achieved by placing messages about caring for the planet and artworks drawn from nature on the product. This remains evident in the children's-wear label today. The name of the children's-wear label consists of two words, one reflecting earth and the other the singular word for children. These two words, as stated by Participant 1 (2013:3), are the two most important aspects in one's life, thus in themselves reflecting deeper meaning other than merely being the name of a clothing label.

Participant 1, the founder of the company, mentions on several instances where influential companies or people have either intentionally or unintentionally contributed to the sub-unit's socially responsible approach. These include specific companies such as Body Shop, who, as mentioned by Participant 1 (2013:12):

> …in thinking...Anita Roddick has been for me . . . I mean I've read her book and I followed her and I definitely think she was at the forefront of ethical retailing… .

One of the directors of Body Shop was invited to become a non-executive board member because of his ethical thinking and approach to retail (Participant 1, 2013:12). Other examples of influences from outside are TOMS shoe brand, an American shoe manufacturer.[83]

[83] TOMs Shoes is an American shoe brand that considers itself socially responsible. They currently have an international initiative where for each pair of shoes sold a pair of shoes is donated to a child in need (TOMS, n.d.).

The second type of influence comes from an association with projects that have a socially responsible footprint. The most notable is the Earthchild Project, mentioned extensively by Participant 1 and Participant 2. The project is the brainchild of Janna Kretzmar, who, through yoga exercise, works with children in the Western Cape areas that are particularly affected by violence (Participant 1, 2013:13). The initiative focusses on environmental awareness, holistic education and the development of children and teachers (Document 6, n.d.). Sub-unit 1 is a founding donor of this non-profit organisation and their association is explained on their website (Document 6, n.d.). The above extends into a social awareness initiative operated and driven by the staff of Sub-unit 1, called the *iCAN* initiative (Document 5, n.d; Participant 1, 2013:14). This group, consisting of staff members of Sub-unit 1, selects projects which they wish to contribute to, and is supported by the management of Sub-unit 1 by allowing time-off from work (Participant 1, 2013:14):

> …they've done a lot of good stuff over the past year on their own accord and all [unit name] as a business has done is allowed them to go and pay them for their time… .

In addition, Sub-unit 1 provides yoga sessions to staff on a regular basis. Participant 1 mentions that all of the above attracts like-minded people and engagement by staff in these initiatives is what Participant 2 (2013:16-17) refers to as 'a return on investment'. Attracting like-minded individuals is evident, as Participant 4 joined the company because of its proclaimed ethical approach (Participant 4, 2013:2).

All of the above refer to the values and the culture of Sub-unit 1 (Participant 1, 2013:13). Participant 1 refers to this as, "…not just the destination, but the journey" (Participant 1, 2013:18). Participant 2 (2013:17) concurs that sustainability needs to be at the heart of the business, and should be a non-negotiable approach. He states:

> So actually the sustainability of it . . . it has to be at the heart of the business, it has to run through every sphere of the company, from retail, to procurement, to HR, to social investment, it all has to tie together . . . I think that it's worth it, you know you can do business in a good way… .

Participant 1 (2013:15) refers to the above as a framework for practice that provides guidance:

> …if I'm to be truthful, all the brand name, the value, the cultures, the culture of the business has given the designers a framework, basically. It's given them a framework…of what we do and what we don't do and why… .

The second aspect that Sub-unit 1 refers to is the sub-unit's approach to practice. The above-mentioned framework adds to what is stated by Participant 2. He divides the practice into two distinct areas: the one is the use of organic and natural fabrics and the other their procurement and manufacturing practices (Participant 2, 2013:2). These practices are based on transparency, thus it requires knowing what the product is made of, fostering relationships and

maintaining a hands-on approach with suppliers and manufacturers. Participant 2 (2013:4) mentions:

> …and I think that gives us a lot of comfort . . . in being able to put our name to something that we believe is the best that we can do . . . and I think our customers resonate with that and they buy into that approach… .

The relationships referred to by Participant 2 (2013:2) are based on Fair Trade principles. In addition, honesty in communication is also presented as a key focus area, and refers to information regarding the organic-ness of the product that is made available to the consumer. Participant 2 (2013:5) specifically indicates that Sub-unit 1 does not attempt to make broad sweeping statements.[84] Information regarding the use of organic fabric is presented to the consumer on the wash care label and is available on-line (Document 5, n.d.). Being honest in one's offering of organic products is emphasised by Participant 3 (2013:6).

7.2.1.2 Environmental sustainability differentiation point

The critical point of differentiation for Sub-unit 1 is reflected in four areas, namely being a commercial entity first and foremost, procurement and manufacturing structures that align to the sub-unit's ethical approach, knowing with what and how the products are made and lastly, applying ethics in-house.

a) Commercial entity

The first area refers to the business structure of the sub-unit. Participant 1 (2013:18) mentions that the sub-unit is a commercially driven entity, which is a fashion brand that needs to sell products to remain in business:

> …first and fore mostly we are a fashion brand, we need to make clothing that people want to wear, and second of all, . . . if we can then add all these other layers of value onto it, which is all that you're speaking about, good and well, but first of all we need to pay salaries at the end of the month, so we are commercially driven… .

Participant 2 (2013:17) agrees, but indicates that the sub-unit is demand-driven but not always profit-driven. The sub-unit works on a vertical business approach, consisting of three business entities. The first business entity is that of operations and design, the second is manufacturing, as even though all manufacturing is outsourced it still needs to be managed and controlled. The third is retail, which allows the sub-unit control over retail, as Participant 1 (2013:19) mentions:

> …[an] important factor for an aspiring young new designer who wants to design ethically, if you're going to sell to a chain store, they could kill everything at the end. You know, your whole process could be completely undermined at the very end… .

[84] The term 'greenwashing' is specifically used by Participant 2. Greenwashing is associated with companies that are not truthful about their environmentally sustainable approaches and use 'eco' as a means to gain marketspace.

Even though the perception might be that a vertical operation of this nature allows the business to gain on margin, Participant 1 (2013:19) argues that the costs associated with the three sub-units do not necessarily equate to high profit.

The decision to move production off-shore was taken due to a problematic manufacturing experience in South Africa, and thus the sub-unit went from producing all products locally, to producing all products off-shore (Participant 1, 2013:10-11). The countries that they have targeted for manufacture are Mauritius and Madagascar, resulting in manufacturing remaining in Africa. The reason for moving off-shore is the organic offering of the two countries and their knowledge and expertise of environmental sustainability and Fair Trade (Participant 3, 2013:10). The decision opened-up new possibilities for environmental sustainability and social responsibility, and allowed the sub-unit to concentrate on organic products and environmental sustainability in design and retail (Participant 1, 2013:11).

b) Aligning procurement and manufacturing

The second area which is noted as a critical point of differentiation refers to procurement and manufacturing structures and consists of several aspects that inform these. The first of these is the direct sourcing and close relationships with the supply chain mentioned by the sub-unit. Participant 2 indicates that, working closely with the manufacturer awards the sub-unit the opportunity to observe their labour practices and thus they can feel assured that these align to Fair Trade and their own ethical approach. Participant 2 (2013:8) states:

> …and that really I think that quite key to our supply chain, that its personal, its close, its transparent, . . . there are no agents involved, and we have a very good grip, and very good handle on all the moving parts. So, from that perspective I think that we can have a lot more . . . higher probability and higher chance of getting better finished product as opposed to more a hit and hope type of approach… .

In addition to this, Participant 2 (2013:4) maintains that Sub-unit 1 pays the supplier and manufacturer a fair price.

Secondly, the manufacturers that produce products for them are all smaller manufacturers, a strategic decision as a hands-one personal approach and better control is possible in such an environment. Participant 2 (2013:7) mentions:

> …rather stick to these 2, 3, 400 machinist type of factories that we can be 30-40 to, I don't know, 70% of their production and at least be a key (/) customer. And then in that way dictate how we want things done…

A negative aspect mentioned by Participant 2 (2013:10) is that, because they use smaller manufacturers, not all structures and processes are formalised, but he felt confident that these could be improved upon. Thirdly, Mauritius is generally strict on their labour laws and with that Sub-unit 1 assumes certain guarantees pertaining to Fair Trade are in effect (Participant 2,

2013:7). The fourth aspect is the manufacturer in Madagascar, who aligns to the sub-unit's view on social responsibility (Participant 1, 2013:16).

c) Knowing what goes into the product

The third area refers to transparency and knowing what goes into the product as discussed under Vision. The sub-unit purchases organic cotton from mills which can provide certification of their organic product. In the Global Organic Fabric Standard (GOTS) document, very specific criteria are provided if mills or garment manufacturers wish to be listed as a provider of certified organic products (Document 1, 2014:3).[85] A textile mill that provides a certified organic fabric has to comply with strict criteria, from how the organic cotton is harvested, stored and processed, and it is audited to ensure that it complies. Certification compliance is provided for all batches of organic cotton fabrics. According to Participant 2 (2013:5-6), the sub-unit regards the certification process as a serious issue and is familiar with the certification processes; he states:

> …and if a consumer was ever to query it, raise it, or question it, I will be quite comfortable in being able to demonstrate that . . . this is the garment, this is made by this factory, they got the fabric from this mill, the mill bought the yarn from this farmer, it was certified, here's the certificate, here's the batch number… .

Both Participant 1 (2013:11) and Participant 2 (2013:6) mention that the sub-unit wishes to take the manufacturing process further than only with regard to the fabric. Participant 2 (2013:5) ads that the sub-unit has never had a query to provide proof of certification, and that the consumer is generally uninterested in this detailed information. The consumer, according to Participant 2 (2013:9), associates 'organic' with 'quality'. Interestingly, Participant 4 (2013:2) also equates sustainability with quality in products, and thus with organic cotton, as the sub-unit only uses this in their eco-related products. Sustainability, as Participant 2 (2013:18) indicates:

> …remains a big opportunity and is fundamental to the brand and thus would not lose it, however it is not something the consumer is interested in or necessarily paying for.

d) Ethics in-house

The fourth area refers to applying the social responsible approach in own business practices, which is mentioned by both Participant 1 (2013:14-16) and Participant 2 (2013:17-18). Participant 1 (2013:14) refers to this as a company that is *genuine,* and was referring specifically to their ethical approach. As Chief Operating Officer (COO) of the sub-unit,

[85] GOTS is one certification body that provides guidance for and implementation of processes to ensure the product complies (Document 1, 2014; Document 2, 2014). Others are: Better cotton Index (BCI), Oeko Tex and Tex Exchange. During the SASTAC presentation I attended, the GOTS was suggested as one of the primary certification bodies.

Participant 2 suggests an ethical, socially responsible approach needs to be visible in everything the company does, from procurement to internal human resources matters. Participant 2 (2013:17) states:

> You can't . . . do it, as a, well this is our little eco-friendly gesture and the rest goes into that direction…that's never going to be sustainable. So actually the sustainability of it, as you say, it has to be at the heart of the business, it has to run through every sphere of the company, from retail, to procurement, to HR, to . . . social investment . . . it all has to tie together.

7.2.1.3 View on environmental advantages

The vision regarding eco-advantages is explained by Sub-unit 1 from two view-points, namely, strategic decision-making and economic decision-making with regard to environmental sustainability. The underlying philosophy of being an ethically socially responsible sub-unit requires transparency and honesty (Participant 1, 2013:12; Participant 2, 2013:2). Participant (2013:12) states:

> …the biggest lesson he has taught me is just be honest. Because you can't do it all.

Honesty requires that one acknowledges what the product consists of and informs the consumer of this. As Participant 2 (2013:4) mentions, trust seems to be placed in the brand to deliver a specific type of product and that the sub-unit is honest in what information the company provides to the consumer. Being honest requires that one knows what the product consists of and how it is produced. The above is achieved by building key relationships with the manufacturers, direct sourcing (thus not making use of agents or leaving decisions of procurement to outsiders) and through personal contact with the suppliers (Participant 2, 2013:2-3). The above mentioned hands-on approach leads to control, which in turn leads to assurance of quality standards, which is what is expected of the brand, according to Participant 4 (2013).

Closely associated with operating from an ethical and socially responsible base and building key relationship is the notion of Fair Trade. Both Participant 1 and Participant 2 see opportunity in growth with regard to Fair Trade and manufacturing. The sub-unit has developed key relationships with specific suppliers who are able to supply certified organic fabrics. The problem however arises when taking the Fair Trade process further. Participant 1 (2013:16) explains this as an added cost that the consumer would not be able to carry, as certification does come at a price. Participant 2 (2013:6-7) refers to developing key relationships with smaller manufacturers as this allows more input and control over product, but processes in such smaller manufacturers are not always in place.

From an economic perspective, organic offering for the two brands of the sub-unit differs. Aspects that impact on organic offering are two-fold (Participant 1, 2013:17; Participant 2, 2013:2). Firstly, as the manufactured product is imported, exchange rates have a direct impact and secondly, the price of cotton, because it is a seasonal crop, can fluctuate. A few years ago, cotton production was low, which had a negative effect on the cotton price, subsequently organic cotton prices increased as well. The children's-wear brand is very sensitive to pricing. According to Participant 1 (2013:6), children's-wear has a ceiling and operates in a very competitive and smaller market than the sister ladies-wear brand.[86] This has an effect on organic offering as there is a limited mark-up one can add to a children's wear product. Price increases on raw material and other auxiliary costs are not always possible; therefore, a strategy is to use a different type of fabric such as 100% cotton. The ladies'-wear brand is in a niche market and there is more opportunity to develop products with organic fabrics.

Participant 1 (2013:12) mentions that as price and markets fluctuate, the amount of organic fabrics in their product range is tempered (more or less organic products are produced). Participant 2 (2013:3), states that a strategic decision was to not change that which is considered to make the brand successful by changing the weight or handle of the organic offering.[87] Participant 3 (2013:3) adds that in the time that she was designer at Sub-unit 1, the amount of organic offering was reduced due to the above-mentioned costs and the fact that the market is not willing to pay high prices for organic products. Participant 2 and Participant 4 (2013:4) indicated that the consumer associates organic offering with quality and handle of the fabric, which is a miss-conception, as the handle of the fabric is not only determined by the fibre content, but also by the type of weave or knit construction of the fabrics. In essence, none of the participants of Sub-unit 1 were certain that organic products necessarily provide an economic advantage – as Participant 1 (2013:16) states:

> You know we take a margin knock on it, but it's definitely . . . a way to . . . really separate us. And if we weren't to take advantage, if [children's-wear label] and [ladies'-wear label] weren't to take the measure that we do, you know, we'd be fools. We'd be silly, because I told you that I think with our brands it's so much more believable . . . with our brand we should do it. But the important thing is we want to.

[86] Children grow faster than adults, hence the products do not last long, not because they are of a lesser quality. Therefore one is only willing to pay a certain amount for the category of children's wear Sub-unit 1 produces (Participant 1, 2013:6).

[87] Fabric weight is determined by the fibres it consists of and the methods of weaving, knitting or bonding. The method of fabric construction determines the way the fabric behaves (for example: folds, drapes, or allows structure). The handle (or hand) of the fabric refers to the way in which the fabric feels on the skin. Both weight and handle of a fabric are important constructs for functional and structural fashion design (Greenberg Ellinwood, 2011:7-23).

7.2.2. Vision of Sub-unit 2

7.2.2.1 Environmental lens of the vision of the business

The environmental approach of Sub-unit 2 can be divided into three areas, namely how did the sub-unit arrive at its current approach to environmental sustainability, why this approach was and is taken and how it forms the base for current praxis.

Although the focus of the sub-unit seems to have been on natural fabrics and processes, the sub-unit's involvement with Estethica in 2008 and 2009 set the scene for the development of environmental sustainability in the sub-unit.[88] Estethica resulted in the sub-unit being focussed on the use of organic fabrics, reducing waste and recycling practices (Participant 5, 2013:4). However, not only has the fashion industry changed in the past five or six years, so has the sub-unit and its staff, and thus a change in focus of environmental sustainability become necessary. Currently, their approach lies in having as low a carbon footprint as possible by making use of regional small entrepreneurial CMTs; and in using natural fabrics and organic fabrics where possible.

During the interview Participant 5 (2013:2) states the vision of the sub-unit to be:

> …to produce high quality garments without compromise to design and in doing so having the least harmful impact on the environment.

The above statement stems from a strong personal belief with regard to the role the industry should have, and a consciousness of the environmental harm the industry is creating. Participant 5 (2013:7) mentions:

> …someone's got to contribute to saving the planet . . . and clothing is such a huge user of natural resources – of crops, of machinery being used, of people involved. Its mass production, it's a human, mechanisation process . . . .Yes, we're in clothing, so we try to reduce our waste, we are trying to be the least harmful possible. So if everyone tried doing a little bit', it's better than doing nothing.

In addition to the above, Participant 5 (2013:8) prefers to work with natural fabrics and not with man-made fabrics because of the use of chemicals in such processes and the resulting water pollution. It is also evident from the interview with Participant 6 (2013:3) that natural colours of the fabrics are preferred to brightly dyed fabrics. This is also evident in the products that were reviewed that mostly reflect earthly natural tones (Product 22, n.d.). Both Participant 5 (2013) and Participant 6 (2013) emphasised quality and durability of the products produced by the sub-unit.

[88] Estethica, was part of the British fashion Council's promotion of environmental sustainability and ethical approach to fashion praxis. The yearly event was sponsored by Monsoon, a leading fashion retailer in the United Kingdom (Britishfashioncouncil, 2014).

7.2.2.2 Environmental sustainability differentiation point

The critical point of differentiation for Sub-unit 2 lies in the resources they prefer to use and in their approach to praxis. Participant 5 (2013:5-6) has a strong personal conviction about sourcing natural and organic fabrics, which has led to some experimentation with various products such as fabrics made from milk, soya and, more familiarly, bamboo. In addition, Participant 5 (2013:5) has a keen interest in developing hemp locally as a viable organic and natural alternative to imported hemp fabrics, and has been actively involved with the development thereof. The approach to their praxis is based on reduce, re-use and recycle. In addition, Sub-unit 2 places emphasis on the durability of their products, a product that will last, and thus re-work and repair are added to their praxis (Participant 5, 2013:6-7; Participant 6, 2013:7; Document 9, 2013). The consumer is encouraged to bring garments back for repair.

7.2.2.3 View on environmental advantages

Both participants of Sub-unit 2 seem to indicate that there are no eco-advantages, but that there seem to be more challenges. The challenges discussed are divided into two categories, namely, unavailability of organic fabrics and lack of interest by the consumer. The challenge in finding suitable organic fabrics has increased. Participant 5 (2013:8) remarks:

> …we don't have availability of supply. If I knew it was here, if I could go down the road and buy organic fabric I would buy it straight away . . . and use it all the time . . . but it's not available. That challenge is so hard to continue to be eco-friendly when your fabric, the base of our business, is not available.

The above is attributed to the state of the fabric industry and the economic climate in South Africa (Participant 5, 2013:8). Local fabric mills that where producing organic fabrics have closed, especially for fabrics that can be used for winter products.[89] The unavailability of organic fabrics has led to an increase in the sub-unit's carbon footprint, as most fabrics have to be imported. According to Participant 5 (2013:3) there are few economic advantages to producing products with organic fabrics, as an organic fabric is inherently more expensive than another fabric. A possible economic advantage is to use organic products as a possible marketing tool. The only economic advantage suggested by Participant 5 (2013:6-7) was the approach of reduce which necessitates a consciousness of reducing waste and thus results in better ratings and a better cut.

A second challenge that Sub-unit 2 presents is the lack of interest from the consumer. The group of consumers that is intent on saving the planet and thus is knowledgeable of organic products is small. Generally, some consumers portray a sense of eco-consciousness only. Participant 5 (2013:3-4) mentions:

[89] Participant 5 referred to the closing of SA Fine Worsted in Cape Town approximately two years ago, from which they sourced most of their winter fabrics (Participant 5, 2013:9). This is a good example of export quality fabrics that are no longer available.

> …[It] depends on if it is a customer walking into a shop or if it is customer – a boutique owner that buys from us. I think ultimately there are certain ones that will look at what type of fabric it is, if it is natural or not. Others won't look at it, only the design of it, if they like the design.

When the sub-unit promotes their product on line, they do emphasise natural fabrics and a natural look and feel to their product, and indicate where organic fabrics are used (Product 21, n.d.). The sub-unit was also approached by the Miss Earth project. Other platforms, such as South African Fashion Weeks (for example, SAFW) do not necessarily promote eco fashion in the way that the London Fashion Week promoted Estethica (Participant 5, 2013:5).

7.2.3 Vision of Sub-unit 3

7.2.3.1 Environmental lens of the vision of the business

The environmental approach of Sub-unit 3 can be divided into three areas, namely what the background that led to the decision for the current approach to environmental sustainability is, what the current approach with regard to environmental sustainability is and how personal belief adds to this approach.

Sub-unit 3 did not start off as an eco-brand; the eco-focus only developed in later years. Key to the environmental sustainability approach is the name of the brand, named after a lake in the Northern Province of Limpopo (Participant 7, 2013; B1). This focus places the brand in Africa, and becomes the main driver behind the brand (Participant 7, 2013:9). Sub-unit 3 experimented with organic fabric in past years, but has experienced a lack of local availability and suitability of organic fabrics for the type of product (Participant 7, 2013:3). The unavailability of appropriate organic fabrics led to a decision to approach environmental sustainability in a different manner. Participant 7 (2013:3) states:

> …it's kind of quite challenging to get eco-friendly fabrics . . . I had to re-look at how I do my business . . . there are a few things we talk about. I'll say the label is eco-lux, because it is quite a luxury brand . . . I talk about sustainability and I talk about ethical, ethics, and I think that is really important. So, everything is manufactured locally… .

Some local organic fabrics are also used, but only for appropriate products. Participant 7 (2013:3,5) specifically states that not all products of the brand lend themselves to using natural or organic fabrics, and thus others, including man-made fabrics, are used. Participant 7 (2013:3) refers to organic fabrics as being appropriate for 'yoga-wear', and not what he suggests his brand to be. Participant 7 (2013:3) mentions:

> …when it comes to fashion, it has to be about comfort, it has to be about fit, about the right colours and you can't really do that and it becomes really expensive, even though a lot of

> our fabrics are imported from Korea and China and Turkey, they are cheaper than the products that are eco-friendly that are produced here… .

In addition to a higher cost of imported organic fabrics, one's carbon footprint increases as well. Participant 7 (2013:3,5) states that South Africa does not have the manufacturing capabilities or the resources to produce organic fabrics (Participant 7, 2013:3;5).

A holistic approach is emphasised by Participant 7's (2013:6-7) personal approach to environmental sustainability. He is often invited to talk about environmental sustainability at various fora that are not only clothing or fashion related.[90] Participant 7's (2013:8) approach is to consider the broader picture, and suggest:

> …so it's really about a holistic thing. And I say to people, look you have to be conscious, it doesn't mean you have to be eco from head to toe, it can be changing little things in your life, and that makes the difference.

Participant 7 (2013:6) considers the South African consumer not to have foresight and thus there is a need to change the conviction of the consumer, and to be aware of what environmental sustainability means and hopes to achieve and not merely what it entails.

7.2.3.2 Environmental sustainability differentiation point

Two main differentiators are discussed, namely, the approach to environmental sustainability and the position of the label and the holistic approach. The main differentiator for Sub-unit 3 is how the brand is pitched, as an environmentally sustainable luxury (eco-lux) product (Participant 7, 2013:3). The type of product category encourages experimentation with different fabrics and the use of more luxurious fabrics. An example of such a fabric is the indigenous South African 'boer' goat cashmere which was used for the Winter 2013 collection (Product 28, n.d.). During the interview, Participant 7 (2013) often referred to story-telling as a way of messaging. He (Participant 7, 2013:5) mentions:

> …I think that's really important because it makes it real for people, because I think by just telling people it is eco-friendly or sustainable, it loses them.

The brand is based in Africa. The introduction on the website (Document 18, n.d.) proclaims:

> We believe that your clothing should be a reflection of your conscience, and that is why we are committed to sustainability not only through the materials we select for every piece we create and our approach to our design, but in every aspect of our work.

On the website the sub-unit states that it is a social and environmentally responsible company (Document 18, n.d.). According to Participant 7 (2013:3-4) this environmentally sustainable approach encompasses the following:

[90] Fora at which he has been a presenter include Eastern Cape Institute of Architects; Sustainability week presented in Sandton annually.

i. some of the clothing products of the label are organic;
ii. their product is manufactured in Africa;
iii. the use of some (ten to twenty percent) locally produced fabrics and practices such as recycling; and
iv. reducing waste and recycling waste into accessories and donating fabric waste to projects.

7.2.3.3 View on environmental advantages

Sub-unit 3 did not specifically highlight advantages in being an environmentally sustainable label. However, the label has become known as an eco-label, Participant 7 is asked to speak about environmental sustainability often and he mentions environmental sustainability and an ethical approach to doing business when interviewed (Participant 7, 2013; Document 18, n.d.; Document 19, 2013; Document 22, 2012; Document 23, n.d; Document 24, 2012). As stated, the sub-unit's approach to environmental sustainability does not lie in using environmentally sustainable fabrics, but in environmental consciousness and awareness Participant 7 (2013:9):

> …and so for me the eco thing is about consciousness, it's about from the start – from the naming of my label, to the fact that it's based in Africa, to the fact that its inspired by Africa, to how organic fits in with that.

The aim of the sub-unit is awareness and encouraging people to change their mind-set. However, Participant 7 (2013:6) mentions that eco is not a motivating factor for the South African consumer.

7.2.4 Summary of key points: Vision

The key points of each sub-unit's vision are discussed and follow with a schematic presentation of the key points. The vision of Sub-unit 1 can be summarised by their approach to environmental sustainability and how this approach manifests in praxis. There seem to be certain influences that continuously shape the sub-unit's thinking and approach to praxis. The influences come from deliberately including people that shape the sub-unit's thinking, such as the case of the executive board member, and from the *Earthchild Project* to which the sub-unit aligns, with regard to what it does and what it has led the sub-unit's personnel to do (for example, the *iCAN* group). Linked to this is an emphasis on having 'meaning', being 'genuine' and having an ethical consciousness. This forms a base for business praxis. In addition, business praxis includes: using organic materials specifically, procurement and manufacturing practices and retail practices, knowing what goes into the product, how the products are made (certification processes), and developing personal relationships with suppliers and manufacturers that are based on honesty and transparency. Figure 7.2 is a visual representation of the summary of key points for Sub-unit 1.

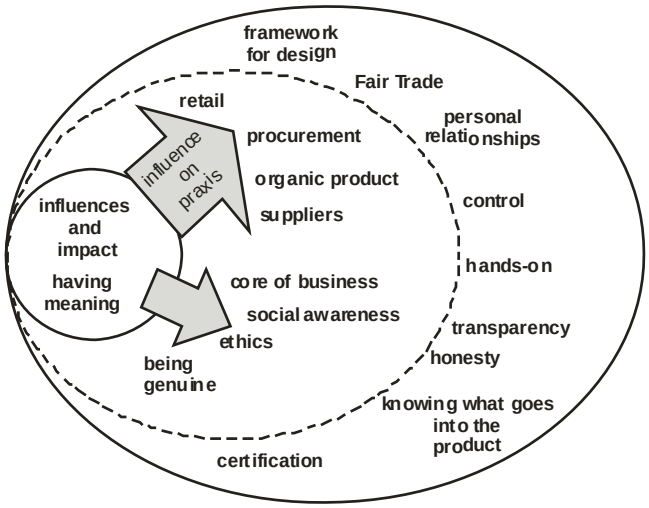


Figure 7.2: Sub-unit 1 – Key points of *vision*
(developed by author)

The vision of Sub-unit 2 is based on the personal beliefs of the creative director and the staff who design and develop the products. The vision statement made by Participant 5 (Document 9, 2013), of producing high quality garments without compromising design and having the least harmful effect on the environment, is reflective of the strong personal beliefs of the Participant of the sub-unit who was interviewed. The above is apparent in the sub-unit's approach to using natural or organic fabrics, concentrating on a low carbon footprint and avoiding chemical processes where possible. The summary of the key points is presented in Figure 7.3 below.

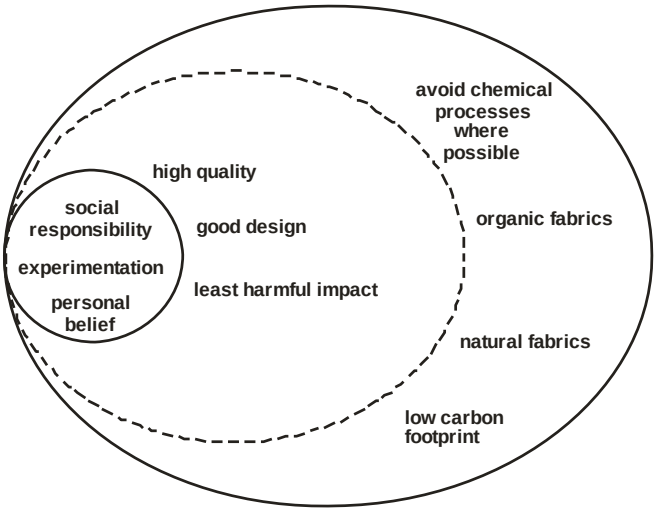


Figure 7.3: Sub-unit 2 – Key points of *vision*
(developed by author)

The vision of Sub-unit 3 is based on a personal approach to environmental sustainability and ethics, and the focus on an eco-lux fashion brand. The sub-unit also advocates a holistic consideration to environmental sustainability that is based on personal beliefs with regard to the environment and Africa. Due to the type of product, not all environmentally sustainable fabrics are suitable. The lack of locally available and environmentally friendly fabrics that are

deemed suitable often require imported fabrics or the use of 'normal' fabrics. The focus of Sub-unit 3 therefore is on praxis with regard to recycling and consideration to the carbon footprint. The key points of the vision of Sub-unit 3 are presented in Figure 7.4.

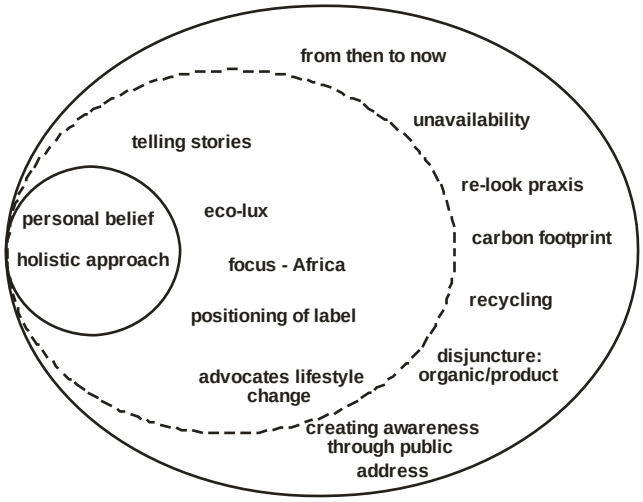


Figure 7.4: Sub-unit 3 – Key points of *vision*
(developed by author)

In this sub-section the data gathered for all the sub-units with regard to vision was analysed in order to comprehend all the sub-units' vision for implementing environmental sustainability. The following sub-section provides an analysis of the strategies with regard to environmental sustainability applied by each sub-unit.

7.3 DESCRIBING THE STRATEGY

In this sub-section the data gathered for all the sub-units with regard to strategy is analysed in order to comprehend all the sub-units' strategies for implementing environmental sustainability. The strategy for each sub-unit is informed by the following topics for discussion. To avoid repetition, not all topics are discussed separately for each sub-unit. The seven topics of discussion include:

i. The drivers that enable implementation of environmental sustainability.
ii. The brand positioning, reputation and creating new market space.
iii. The level of consumer consciousness regarding environmental sustainability.
iv. Strategy for environmentally sustainable practice.
v. The associated environmental costs.
vi. The future of environmental sustainability.

The section concludes with a summary of the strategy of all three sub-units, and a diagram is developed that summarises the information.

7.3.1 Strategy of Sub-unit 1

7.3.1.1 The drivers for environmental sustainability

Based on the suggested paradigm for environmental sustainability in the industry as discussed in Chapter 5, and on data refinement, the focus of Sub-unit 1 seems to be predominantly on level two and level three.[91] The sub-unit's use of organic fabrics or natural fabrics aligns to the descriptor for level 2, namely, substitute components with a focus on end-result. In level three the emphasis lies on consumer consciousness and moves towards a transforming approach to sustainability. The second highest category, as presented in Figure 7.5, is level three; this could be due to the sub-unit's emphasis on ethics and a personal lifestyle approach to sustainability.

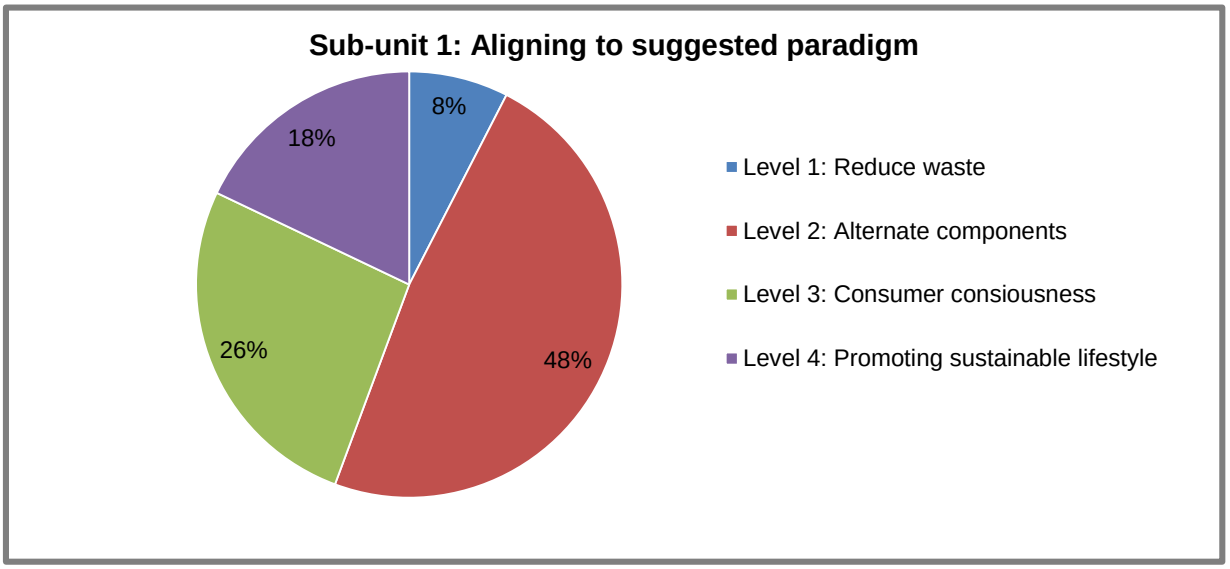


Figure 7.5: Sub-unit 1 – Alignment to suggested paradigm

The emphasis on level three is visible through the viewpoint from management (Participant 1, 2013; Participant 2, 2013) and the subsequent application thereof as strategy for environmentally sustainable praxis. For participant 1 (2013:3), emphasis lies on ensuring that the brand has meaning and creating an inspiring environment, and how these translate into a framework for their business praxis. The second aspect is how the above-mentioned meaning and inspiring environment informs business praxis.

When the sub-unit starting operating in the late 1990s, a brand name that in itself provided a message of communicating the focus of the intended brand, was selected. The brand name consists of two parts, the first referring to earth and the second referring to whom the brand is

[91] Text in the refined conceptual framework was placed against a level. The corresponding text was colour coded, and it is the number per colour, per level, that represents the percentages in the graph. The spreadsheet with data is held by the researcher in a secure location. It was thus possible to develop a sense of where the prominence of Sub-unit 1 was on the Armstrong and LeHew suggested paradigm.

intended for. Both the words have significance and the combination of the two words in the brand name places emphasis on the intended message of the brand, an aspect that participant 1 (2013) refers to often in the interview. The second aspect of using the brand for messaging the sub-unit's consciousness of the environment was, when the children's-wear brand was established, achieved by placing phrases or images of nature on the product. Phrases about environmental awareness are still used on the children's-wear products at the time of writing.[92] Participant 1 (2013:17) refers to the products aimed at the ladies-wear market as *becoming addicted to it*, and referring to the type of product and handle and feel of the fabrics used. The sub-unit's website (Document 6, n.d.) also refers to *a sustainable addiction*.

i. Inspiring environment

An inspiring environment is developed by aligning to social projects which in turn influence praxis. External projects that show social engagement that the sub-unit aligns to, are the Earthchild project and the Sixteenth Street Shop Mandela Day intervention mentioned on their blog (Document 6, n.d.). The social projects undertaken internally by the *iCAN* group, described by Participant 1 (2013:14) and Participant 2 (2013:17), are a follow through of the social responsibility the sub-unit ascribes to, which leads to a meaningful operational environment, as mentioned by participant 2 (2013:17):

> …all tie together, rewarding to see it start to happen. You know you can do business in a good way.

Yoga forms an important aspect that the sub-unit uses to create an enabling and caring environment. Free yoga is provided once a week and the *iCAN* group is supported in their social initiative by allowing official time off from work for this (Participant 2, 2013:14-15).

The sub-unit integrates and applies the influence of other people on business praxis. Participant 2 (2013:12) specifically refers to the influence of the appointed executive board member because of his ethical approach to retail that is based on 'being honest'. The sub-unit's decision to move production off-shore further enabled a focus on environmental sustainability in design and product development and retail (Participant 1, 2013:11). All of the above, namely the influences that shape and inform praxis and creating an enabling environment, leads to a business that cares and that attracts like-minded personnel (Participant 1, 2013:14; Participant 2, 2013:11). The above is confirmed by Participant 4 who indicates that her reason for applying for a position at the company was because Sub-unit 1, according to her, is deemed to be a socially responsible company.

All of the aspects mentioned above creates an enabling environment and provides a framework for design praxis that constructs a clear direction for design development.

[92] Refer to Figure 7:6(a) and Figure 7:6(b).

Fundamental to the praxis is environmental sustainability and ethical behaviour, and these are consistently applied throughout business operations. Participant 1 (2013:15) refers to a framework for design and retail that is informed by the above-mentioned aspects and emphasises the role of design in praxis. For Participant 2 (2013:2), this manifests in a fair and ethical approach to their supply chain, how they know what the product consists of and how this is controlled, and lastly how ethical practices are implemented in business operations.

Participant 2 (2013:16,18) mentions that most important is to develop a sustainable brand and thus decisions are taken keeping that goal in mind. Participant 1 (2013:18) confirms this and reiterates that first and foremost is the need to develop a fashionable brand, generating income. Given this, to balance profit and environmental sustainability, in their case using organic materials, is a fine line. Although profit might not always be a driver when key strategic decisions are made, developing commercially viable products is (Participant 1, 2013:15,16,18). Strategic decisions that influence praxis are, to name a few, the decision not to franchise due to lack of control, the decision for a vertical operation, thus controlling retail and the decision to move production off-shore due to that market's knowledge and capability (Participant 1, 2013:10-11,19; Participant 2, 2013:18).

7.3.1.2 <u>The brand and environmental sustainability</u>

The analysis on the brand for Sub-unit 1 consists of brand positioning, creating new market space and brand reputation.

i. Positioning the brand

Sub-unit 1 sells two brands, a label for children's-wear and a label for ladies-wear. The market for children's-wear has more competition, it being a children's-wear domain, and thus has a fairly low profit margin, resulting in the need to be commercially inclined being far greater for children's-wear than it is for ladies-wear (Participant 1, 2013:6). To remain competitive, the children's-wear range is more colourful. The type of product and the intended consumer allows for the children's-wear range being used as billboard for consumer consciousness through messaging, as presented in Figures 7.6(a) and 7.6(b).

Figure 7.6(a): Organic classic t-shirt (girls)
(Product 16, n.d.)

Figure 7.6(b): Organic classic t-shirt (boys)
(Product 12, n.d.)

However, due to the competitiveness of the product category, there is less opportunity to inform the consumer (in this case, generally but not exclusively, the mother/purchaser of the product) of organic and other social responsibility issues of the sub-unit (Participant 1, 2013:20). Participant 4 (2013:4), one of the children's-wear designers, mentions that the consumer recognises this brand as one *being inspired by nature*.

The ladies-wear label is intended for a broad market, but the product has a specific look and feel to it. Participant 1 (2013:17) refers to this label as leisure-wear with an emphasis on comfort and handle. The focus of this label is 'less is more'. This product range has fewer obvious competitors than the children's-wear range and, according to Participant 1 (2013:17), the customer for the ladies-wear range seems to appreciate and understand the different type of products the ladies-wear range offers. Consumer response to the ladies-wear range focusses on the quality, comfort and feel of the fabrics used (Participant 1, 2013:17). The ladies-wear range is more sensitive to change, but is also not a high fashion item and thus can accommodate more classical styles as presented in Figure 7.7, which depicts a return to the classics which are made of organic cotton (Participant 3, 2013:3, Document 5, n.d.).

Figure 7.7: Winter 2014
(Document 5, n.d.)

There is no specific fund allocation for marketing activities, and thus all communication about the product is done in-store and on the website (Participant 1, 2013:19). As a store needs to provide a lot of information which is bound to the seasonal store calendar, there remains very little opportunity to inform the consumer about the sustainable approach of the sub-unit. The website does provide information on their approach to environmental sustainability and the use of organic materials. Product information also includes fabric composition and provides information on wash and care (Document 5, n.d.; Document 6, n.d.). Product labelling provides information to the consumer on the 'organic-ness' of the product they intend to buy. However, Participant 2 (2013:9) mentions that the average consumer has a miss-conception about organic fabrics and assumes that the 'handle and feel' of the fabric is a result of the fabric being organic. The method of fabric construction has little to do with whether it was made with organic cotton or not. Both Participant 1 (2013:16) and Participant 2 (2013:3) remark that, through times of financial adversity, the sub-unit has not changed the organic composition of certain products. However fewer organic products, due to a rise in cotton price or the rate of exchange, are offered. Both Participant 1 and Participant 2 refer to the above as a differentiating factor that makes the brand more believable.

ii. Creating new market space

The exposure to other African countries and the opportunities with regard to organic products and Fair Trade resulted in a definite change in focus for the sub-unit (Participant 1, 2013:10). According to Participant 1 and Participant 2, the organic offering and knowledge regarding sustainability from countries such as Mauritius and Madagascar is much better (Participant 1, 2013:10-11; Participant 2, 2013:2,5).[93] The possibility of purchasing certified organic fabrics

[93] The respondents do not indicate to which company they compare this statement, however, as the sub-unit moved their manufacturing out of South Africa, it is assumed that the comparison is between the countries the sub-unit is using now for the manufacturing of their products and South Africa.

that have the correct handle and feel that are needed for the product, adds value (Participant 2, 2013:3). Both Participant 1 and Participant 2 refer to Fair Trade as future opportunities and their current involvement with a socially responsible manufacturer in Madagascar is a definite positive aspect. Participant 1 (2013:16) mentions:

> …one of our pride and joy's is, we found a supplier out in Madagascar, who is equally sociably responsible . . . they [are] doing a whole water recycling story. They make a lot of product for Levi Strauss, so Levi has helped them, and we're very proud to be associated with them and we're starting to think much more like those types of things. Fair Trade for us is a big opportunity… .

iii. Brand reputation

According to Participant 2 (2013:5), the consumer seems to have certain assumptions about the labels produced by the sub-unit and therefore the sub-unit needs to ensure that honest communication with regard to the organic content of the products is relayed to the consumer. This is done by means of a product information and wash-care label that accurately reflects the fabric content of each product. Participant 2 (2013:5) indicates:

> We don't try to green-wash . . . or make broad sweeping statements. We are an organic brand…We label our garments according to the fabrication, so if you take the wash-care garment, the wash-care label – we are very strict about making sure that the wash-care represents the organic or non-organic status of the garment. So if it is an organic cotton, the wash-care label will say organic, if it is not - it will say cotton. So the customer can make the decision for themselves because not all out product is made from organic cotton.

Although organic fabric certification information could be made available to the interested consumer, only a small percentage of their customers would be interested or understand what the certification means (Participant 2, 2013:5-6). Therefore, the need to be honest and transparent about their product is deemed sufficient for the consumer. Participant 2 (2013:6) mentions:

> And I think there is a lot of trust placed in us as a brand by the consumer and that's why we take [sustainability] very seriously…I think if [you] look at our guys in the supply chain, they do take it very seriously, they will not cut corners in terms of, as I said, wash care, and trying to make out, like you know, we are more than what we are.

On the website, product information and fabric content is provided for each product, but the wash-care instructions for all products for both labels is similar (Document 5, n.d.; Document 6, n.d.). Retail staff is trained to enable each one to provide information to the customer (Participant 2, 2013:9).

7.3.1.3 <u>The target market and environmental sustainability</u>

Reviewing Sub-unit 1's comments on the general eco-awareness of their customers seems to indicate that South African consumers are not really concerned about environmental

sustainability when it concerns clothing. Their primary concern remains price and quality, thus value for money. This can be seen as an almost hypocritical approach, as mentioned by Participant 2 (2013:11-12):

> …you go to any supermarket . . . it's become mainstream. I think fashion will eventually head there, but the consumer in fashion is, as I said, a lot more hypocritical then in something like food. Because they'll say I want a neat looking garment but I don't really want to pay for it. So they're quite happy to sort of enjoy the benefits of cheap labour, cheap procurement, whatever, to say ah – I've bought this wonderful t-shirt for 100 bucks, but…on the other hand be quite high and mighty about where they buy their eggs.

This assumed lack of awareness could stem from perceived benefits that organic food products have, such as health and, as Participant 2 (2013:8-9) argues, most consumers associate 'handle and feel' of the fabric with it being organic – a wrong association or assumption.

For the average consumer, organic or environmental sustainability is not a priority as it might be with organic food products, as suggested by Participant 2 (2013:11). Thus, according to Participant 4 (2013:7), eco-fashion will always remain high-end.

Participant 2 (2013:9) mentions:

> …the benefits of organic extend down the chain, but it's still far away for the customer to really see that. They will say they care about it . . . will you pay more for it? No really, on average. Some would, there are some of our customers that would [shop] with us purely because of the organic cotton.

What is changing is the perception of the younger consumer, who seems to be more environmentally conscious and concerned (Participant 2, 2013:12). All Participants in sub-unit 1 concurred that the South African consumer seems to be less concerned (than, for example, the British fashion consumer) with regard to environmental related issues in fashion.

Participant 1 and Participant 2 agree that the consumer is not aware of their ethical approach to doing business and, unless the consumer regularly visits the website and reads the blog, would not be aware of the social projects with which the sub-unit is involved (Participant 1, 2013:16; Participant 2, 2013:12,17; Document 6, n.d.). Both management Participants agreed that 'telling the sub-unit's story' would be an added advantage (Participant 2, 2013:4-5). A slogan that Sub-unit 1 used for many years was: *look good, feel good, do good*. Participant 1 (2013:20) argues that this was a powerful buying line because:

> Lots of brands can actually do that, lots of brands can make you look good and if you look good you feel good. But ours is also do good. So we want the customer to come to us because they know they're also [a] conduit to doing good.

7.3.1.4 Environmentally sustainable praxis

The praxis is divided into the following categories based on Figure 4.1. The categories include:

i. fibre and fabric development;
ii. product development;
iii. from factory to retail;
iv. ethical processes;
v. Zero Waste and reducing waste;
vi. informing the consumer;
vii. recycle, up-cycle and re-use; and
viii. use of product.

i. Fibre and fabric development

Sub-unit 1 moved their procurement and manufacturing processes off-shore to Mauritius and Madagascar. The types of fabrics that are used are cotton, organic cotton, linen, silk, viscose (Participant 1, 2013; Participant 2, 2013; Participant 3, 2013; Participant 4, 2013; Document 5, n.d.; Document 6, n.d.). Their organic cotton is certified according to rigorous international standards, and the sub-unit is able to verify where the organic cotton fabrics originate and how they were produced (Participant 2, 2013:5). They currently purchase organic cotton from two mills. Organic fabric certification entails that, amongst other factors, between 70 percent and 95 percent of the products need to contain organic cotton fibre. Products should be produced taking into account environmental management, waste water management, adhering to minimal social criteria such as no forced, bonded or child labour, good and accurate record keeping and ensuring clear auditing of all processes and trading (Document 1, 2014(a)).

The use of organic cotton is important to the profile of the brand. The focus of certification adds to Fair Trade and ethical labour practices, as certification includes these aspects. The sub-unit applies direct sourcing as a strategy for procurement, which eliminates the possibility for garment manufacturers to select inferior components and ensures that Sub-unit 1 knows what goes into the garment (Participant 2, 2013:2).

ii. Product development

Underpinning product development is having a transparent supply chain, personal relationships with the suppliers and applying direct sourcing (Participant 2, 2013:7). Knowing what goes into the garment also requires transparency and this is achieved through building personal relationships with suppliers. The sub-unit operates from a small supplier base by using manufacturers that produce less volume. This ensures that the sub-unit is a key customer of the manufacturer and allows the sub-unit to have input on the quality of the products produced by the manufacturer (Participant 2, 2013:7-8; Document 4, n.d.). The above-mentioned approach allows for a more hands–on approach. Currently only two manufacturers are used. The downside of using smaller manufacturers is that their processes

are not as formalised as the larger manufacturers with regard to structures and practices, therefore the risks are higher.[94]

The sub-unit has its own personnel that visit the suppliers and manufacturers in Mauritius and Madagascar regularly (Participant 2, 2013:16). Labour practices in Mauritius are strict and well controlled. The close personal relationships fostered with suppliers and manufacturers, and the control measures taken, ensure that the sub-unit is familiar with their labour practices and that these align to the sub-unit's own ethical view with regard to Fair Trade practices. The sub-unit views Fair Trade as an opportunity and thus the association with the manufacturer in Madagascar is seen as an advantage (Participant 1, 2013:16; Participant 2, 2013:5).

In addition, Participant 2 (2013:4) states that manufacturers are paid a fair price:

> …we've always really maintained an approach that – if we're going to squeeze our suppliers to the point that they can't make money, then all we're doing is shooting ourselves in the foot. So, we've always ensured that the supplier is treated fairly, paid a fair price, and also that the labour practices within the suppliers are practices that we are comfortable with.

Product design is done is in the Cape Town studio by a team of designers for each of the brand labels. Sub-unit 1 acknowledges the importance of design as a key process in product development (Participant 1, 2013:19; Document 8, n.d.:2). Design is informed by the framework and the sub-unit's value system discussed in the vision, which provides clear direction for design (Participant 1, 2013:15). Some aspects that, for example, underpin the design for the children's-wear range – that the designers are not to use black, or to use images such as skulls which are deemed inappropriate for children's-wear. Participant 1 (2012:15) states

> …my design team have a very clear structure of what we are, not only in the aesthetic, not only in the look and feel like in terms of you can't do black and you can't do this, 'can't' is the wrong word, but what we do do. We definitely moved from a, starting from a natural only colour, you now go into an [name of retailer] store and it's full of colour, yellow and turquoises, because we've had to move [to] a commercial space, but they still have a very clear framework of what's right and what's wrong.

Participant 1 (2013:11; Document 8, n.d.:1) mentions that the decision to move production off-shore enabled the sub-unit to focus on environmental sustainability in design.

iii. From Factory to retail

All products are shipped back to the warehouse in Cape Town, South Africa from where they are distributed to the retail outlets throughout the country. Sub-unit 1 is a vertical operation

[94] The risks mentioned were indicated by Participant 2, but not elaborated on.

consisting of three business nodes, namely design, management of procurement and manufacturing and retail. The focus on retail is another measure of control over environmental sustainability (Participant 1, 2013:19). The Sub-unit's own internal labour practices reflect their socially responsible approach with regard to pension plans, disability cover and life cover. All staff members, regardless of position, receive the same benefits (Participant 2, 2013:15). Participant 1 reiterates in an interview the importance of the people rather than the products in a retail brand (Document 8, n.d:1). Retail staff members are trained to communicate organic features of the products (Participant 2, 2013:10).

iv. Ethical processes

Knowing how their product is made and under which conditions, using certified organic cotton and associating with socially responsible factories all underpin the sub-unit's own ethical approach to praxis. Participant 2 (2013:15-16) mentions that environmental sustainability and ethical practices are part of the brand DNA and are fundamental to their business operations. This also aligns with their focus on transparency and honesty in their business operations and socially responsible ethos that is argued as being at the heart of the business (Participant 2, 2013:15-16). Both Participants from management expressed interest in developing social responsibility in the manufacturers with whom they choose to work (Participant 2, 2013:16; Participant 1, 2013:6-7).

7.3.1.5 Associated costs of environmental sustainability

Participant 1 (2013:8-9) mentions that producing locally was 'just hard', and merely producing sufficient volumes at an accepted quality level with limited knowledge and resources, marginalised the focus on environmental sustainability in design and retail. At a trade show in Las Vegas, the Sub-unit was exposed to the possibility of producing off-shore and immediately saw advantages in doing so. The two countries that appealed the most were Madagascar and Mauritius because their knowledge of environmental sustainability and approach to Fair Trade was more advanced than in South Africa (Participant 1, 2013:10). Within an 18-24 month period the sub-unit withdrew from local manufacturing and moved all manufacturing off-shore, and it anticipates that in 2015 the sub-unit will have one million products produced off-shore (Participant 1, 2013:11). This is a loss for the South African manufacturing industry, but a gain for the sub-unit. The move to off-shore production allowed the sub-unit to focus on environmental sustainability in design and retail, and subsequently add a focus of Fair Trade.

One of the major costs identified by Sub-unit 1 is the fluctuation in the price of organic cotton due to a cotton shortage, or the change of exchange rate. This has a direct influence on the amount of products produced with organic cotton. Participant 1 (2013:16) and Participant 2 (2013:13) suggest the sub-unit does not allow the above-mentioned influences to change the type of organic fabrics used, or to increase the prices accordingly. Some of the costs, accrued

by the above-mentioned influences, are added to the product, depending on the label. Another cost aspect is the business model, being three businesses in one, which may seemingly provide margin. However the costs associated with the three businesses dilute profit on margin (Participant 1, 2013:19).

7.3.1.6 Future strategies

Opportunity for Fair Trade, although suggested as being complicated, is mentioned by both Participants from management (Participant 1, 2013; Participant 2, 2013). Formalising processes with manufacturers is noted by Participant 2 (2013:7). Documenting internal processes is another intended task noted by Participant 2 (2013:18). Participant 2 also suggests raising awareness in supply and retail as a needed next step for environmental sustainability in South Africa (Participant 2, 2013:11,13). All agree that the consumer needs to be more knowledgeable and move from mere eco-awareness to eco-consciousness.

7.3.2 Strategy of Sub-unit 2

7.3.2.1 The drivers for environmental sustainability

Based on the suggested paradigm for environmental sustainability in the industry discussed in Chapter 5, and on data refinement, the focus of Sub-unit 2 is predominantly on level 2.[95] In level 2 the focus is on result and the emphasis lies on substituting parts and processes, as presented in Figure 7.8.

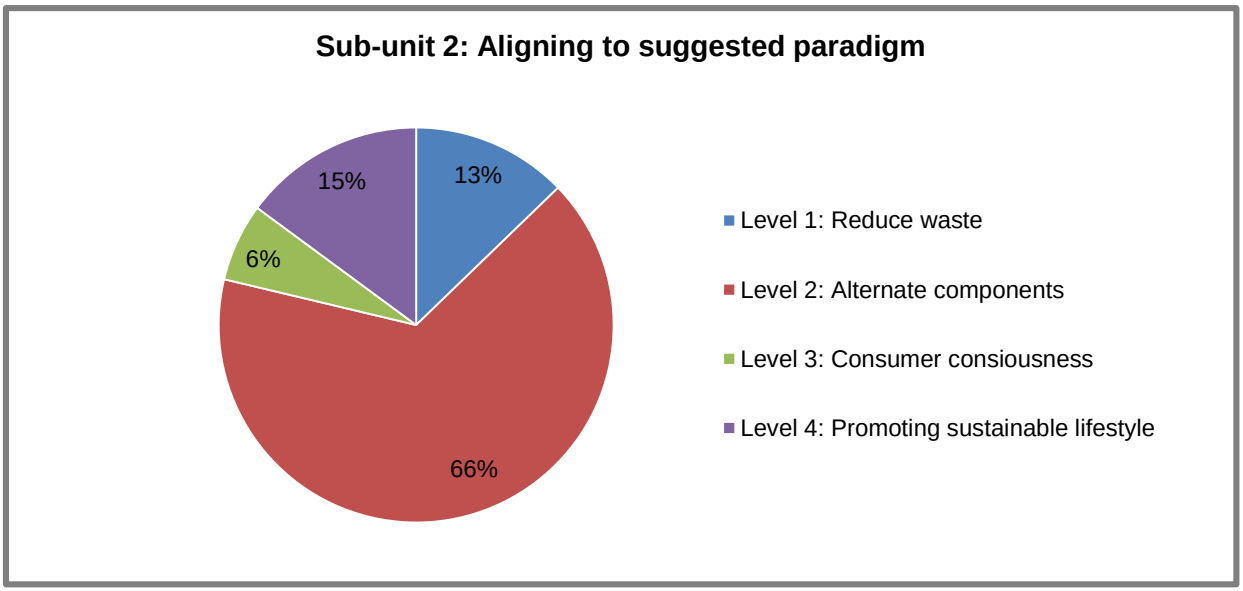


Figure 7.8: Sub-unit 2 - alignment to suggested paradigm

[95] Text in the refined conceptual framework was placed against a level. The corresponding text was colour coded, and it is the number per colour, per level, that represents the percentages in the graph. The spreadsheet with data is held by the researcher in a secure location. It was thus possible to develop a sense of where the prominence of Sub-unit 2 was on the Armstrong and LeHew suggested paradigm.

The focus on waste, on reducing and on recycling is stated by Participant 5 (2013:8; Document 9, 2013) as follows: The priority of Sub-unit 2 is to first source natural, eco-friendly, or organic materials. The remaining aspects are equal in importance, namely, not to waste and to try and to reduce where possible; to re-work and re-use old garments and to use off-cuts and not discard these. The drivers for environmental sustainability for sub-unit are thus clear, namely:

i. Fabric first
ii. Reduce waste
iii. Re-work, re-use and repair
iv. Recycle

This approach is reflected in Table 7.2 where the emphasis is predominantly on level two and thus can be explained as follows.

Table 7.2: Strategy for Sub-unit 2

Driver	Visible in strategy by	Level
Holistic approach	Natural fabric	Level 2
	Organic fabric	Level 2
	Eco-friendly fabric	Level 2, level 3
	Reduce waste	Level 1
	Re-work	Level 3
	Re-use	Level 2
Social awareness	Recycle	Level 2, level 4
	Repair	Level 4
	Manufacturing	Level 3

Participant 5's holistic approach stems from a deep personal belief in contributing to the well-being of the planet by developing products that are the least harmful for the environment, and this informs the praxis in Sub-unit 2 on a daily basis (Participant 5, 2013:7-8). Aspects that are considered are the development of suitable eco-friendly fabrics such as hemp (which Participant 5 actively pursues) and the desire to know the practices (environmentally friendly or not) of the production of the fabric that Sub-unit 2 is using for their products (Participant 6, 2013:6). Participant 6 (2013:5-6) specifically mentions an approach of longevity which stems from personal belief and this participant opposes the notion of disposable fashion. The embedded ethics, given in Table 7.2 above, refer to how and where the sub-unit produces their products and the personal relationships they have with the CMT manufacturers that produce their products. It is also visible in why the sub-unit, for example, recycles their fabric waste, and how the repair of existing products is encouraged through the repair-service offered by the sub-unit (Participant 5, 2013:6; Participant 6, 2013:8).

7.3.2.2 The brand and environmental sustainability

The analysis of the brand for Sub-unit 2 consists of brand positioning, creating new market space and brand reputation.

i. Positioning the brand

The brand is known for its approach to natural fabrics and earth-toned colours. The sub-unit's webpage has not been altered for the past few years but Sub-unit 2 has a presence on a company Facebook page on which information is regularly placed (Product 21, n.d.). The emphasis on natural fabrics is reiterated by both participants of the sub-unit interviewed. The styles and looks of the products the sub-unit produces mirror which is mentioned by the participants (Product 22, n.d.). Participant 6 recently designed a dress for a 5FM radio disc jockey, which was used in a fashion show aimed at the awareness of cruelty in the fur trade (Figure 7.9).[96]

Figure 7.9: Hemp dress (Product 18, 2014).

The sub-unit's involvement with events, such as the Fur Free fashion show or designing a dress for Miss Earth, adds to their reputation as an eco-fashion label (Participant 5, 2013:5).

ii. Creating new market space

Participant 6 (2013:5) mentions that when doing interviews, they emphasise the use of natural fabrics as opposed to synthetic fabrics, and consider word of mouth, and the value of the product, to be powerful tools for marketing. A second emphasis is therefore to produce well designed and well-constructed clothing products that are durable. Added to this is the opportunity to have clothing repaired. Participant 6 (2013:8) states:

> People have something that they love and they've had it for years, now they've burnt the collar. We will make a plan, we will fix it up. We've got the capability to do it here, and we've got a small enough customer base. They show loyalty to us, so we have a bit of a loyalty to them. We keep the clothes good.

[96] 5FM is a well-known South African radio station. *Fur Free SA* was held in April 2014 and a number of celebrities wore designer clothing that contained no animal products, at this event. One of the designers of Sub-unit 2 participated (Arden, 2014).

iii. Brand reputation

The interaction that the sub-unit is able to have with potential customers and the variety of products, ready-to-wear and bridal wear that they produce aids brand positioning. Participant 5 (2013:2) mentions that initially the benefits of being an organic brand were used by many as a marketing tool. For Sub-unit 2 there are some customers who buy from the sub-unit specifically because of their approach to natural elements, as shown in Figure 7.10.

Figure 7.10: Bohemian bride
(Product 22, n.d.)

Some wish to invest in organic clothing, however most customers only consider the design of the product as being important (Participant 5, 2013:3-4; Participant 6, 2013:5).

7.3.2.3 <u>The target market and environmental sustainability</u>

Participant 6 (2013:5) states:

> …we do have those customers who know fabric and who think about the source and think about what's going to actually happen with that fabric and they appreciate naturals. And that is our client base, people that appreciate good natural fabric. But unfortunately . . . there is also a large part of this population that know nothing… .

According Sub-unit 2, the South African fashion consumer has to become more eco-aware and consider environmentally sustainable issues with regard to clothing products (Participant 6, 2013:7). Fashion is innately consumer-driven and a more conscious consumer will drive the environmentally sustainable fashion market.

She (Participant 6, 2013:7) mentions:

> …it is very easy to just go to the shop and buy something without thinking at all about it, but if it says on the swing tag somewhere – this was made in this country with this fabric –

> it sort of starts a seed of thought in the back of your head . . . and you start looking out for that and you start avoiding things with bad reputations.

Participant 6 (2013:4-5) indicates that it is imperative that the South African consumer moves away from a 'disposable mind-set' and equates the return to durable quality clothing products to pre-World War Two.[97] She also suggests that the retailer has a critical role in the development of environmentally sustainable fashion.

7.3.2.4 Environmentally sustainable praxis

The praxis is divided into the following categories based on Figure 4.1. The categories include:

i. fibre and fabric development;
ii. product development;
iii. from factory to retail;
iv. ethical practices and recycling;
v. Zero Waste and reducing waste; and
vi. informing the consumer and use of product

i. Fibre and fabric development

The vision of the sub-unit clearly indicates the need for quality products that have the least impact on the environment. The consideration of the use of natural or organic fabrics aligns to the vision in that regard. The starting point of the label in the late 1990s was a focus on organic fabrics, which further developed with their involvement with Estethica. Participant 5 (2013:2) mentions that in the beginning almost 90 percent of their product was natural or organic, to the point that they used organic cotton thread.

The focus on being organic as far as possible also led to experimentation with different types of organic fabrics. One of these is Hemp, made from the cannabis plant. Participant 5 (2013:5-6) actively participates in the development of the Hemp fibre for use in fabrics as it is a preferred natural (and considered organic) fabric to use (Participant 5, 2013:6; Participant 6, 2013:3). In South Africa, Hemp can be considered a future renewable fibre, as a potential agricultural programme is aimed specifically at providing employment in the Eastern Cape Province (Blouw & Monde, 2007:3-11). Currently hemp is imported. A study done early in 2000 by the Agricultural Research Council – Institute for industrial Crops (ARC-IIC) and the Döhne Agricultural Development Institute, was to test four specific Hemp cultivars. They found that Hemp could be successfully grown in South Africa, with a comparable fibre yield to that of other countries (Blouw & Monde, 2007:9). According to Participant 5 (2013:5-6), government policy has halted the development of the Hemp fibre due to the association to the drug-related

[97] The connection to pre-World War Two seems to be a personal one for Participant 6. However, what she could have meant with this remark is the connotation to utility clothing as prevailed in the United Kingdom during World War II, when constraints on the production of clothing resulted in encouraging the industry, and thus the consumers, to economise on the use of cloth and labour. The mass production of fashion developed during the late 1950s and beginning 1960s (Waddell, 2004:26-27).

cannabis variety. However, a recent posting by Hemporium SA indicates good progress at the Western Cape commercial Incubation Research Trial (Hemporium, n.d.).

Participant 5 (2013:6) is constantly searching for natural and organic fabrics to use other than cotton, linen or hemp. Other fabrics he has considered for use in the sub-unit's products are fibres made from soya, silk and bamboo, such as the bamboo example presented in Figure 7.11 below.

Figure 7.11: Handmade bamboo long-line blouse (Product 30, n.d.).

In each of these alternate suggestions for fabrics, Participant 5 (2013:5-6) takes the entire production process of the fabric into consideration: for example, the amount of water used for the growth and development of a cotton fabric versus the less stable bamboo fibre that still requires chemicals to convert the cellulose fibre into a suitable fabric, and the slimy-ness of the milk fibre. Participant 5 (2013:6) mentions that the fibre developed from milk does not have the right weave construction for their type of product.[98]

In addition to using natural fabric, emphasis is also placed on dyeing techniques. Participant 5 (Document 9, 2013) states that pigment dying is preferred to other dyes. In the recent collection developed by Participant 6 (2013:3), emphasis was placed on no dyeing, thus using the natural

[98] The milk fibre, originally developed in the 1930s, is a considered an environmentally friendly fibre that has superior qualities to that of other man-made fibres. Although it is considered to be a man-made fibre, the production process has little effect on the environmental, and thus can be classified as an eco-product. The milk fibre has passed Oeko-Tex Standard 100 green certification for internationally considered environmentally friendly fibres (Cyarn, 2006; Euroflax, 2005).

colour of the fabric and experimenting with vegetable dyes. Examples mentioned are walnut shells and beetroot juice. These are practical for a collection shown at a fashion show, but not necessarily for producing volume. On occasion, own fabrics are made by re-purposing other fabrics as in the example in the Estethica magazine (Document 10, 2009:2). In addition, other hand-made fabrics are sold in the shop, such as the hand-woven cotton fabric made by a Cape Town weaver (Participant 5, 2013:9).

The lack of availability of resources is a major problem for the sub-unit. Participant 5 (2013:8), states:

> That challenge is so hard to continue to be eco-friendly when your fabric, the base of our business is not available.

Due to local unavailability of preferred fabrics, most fabrics are imported (Participant 5, 2013:2). Winter fabrics are identified as a problem area as the closing of a well-known South African textile mill is a problem for the sub-unit. Fortunately, winter it is a short season. Winter products that were sourced for the product analysis component of this research do not indicate the type of fabric sourced for the products.

ii. Product development

Part of Sub-unit 2's strategy states (Document 9, 2013; Participant 5, 2013:4):

- Consider the carbon footprint in manufacturing
- Not to waste [reduce]
- To re-work old garments [re-use]
- Not to discard off-cuts [recycle]

The Sub-unit produces some of their products in-house and out-sources the rest to local CMT manufacturers. The small production runs, specialised projects and bridal wear are all produced in-house in the production room adjacent to the retail venue (Participant 5, 2013:3; Participant 6, 2013:4). The larger production runs are produced in small owner managed CMT factories in the Gauteng area in South Africa. The close proximity of the CMT factories to the sub-unit's design centre and retail venue adds to reducing the carbon footprint.

Reducing waste is achieved by considering the lay-out and cut of the product and this assists to keep rating to a minimum (Participant 5, 2013:7; Participant 6, 2013:3). In addition, the designer Participant 6 (2013:3) experiments with waste reduction in patternmaking and has developed some patterns where almost no waste occurs. Sample wedding garments, or old style wedding garments, are reused to develop new products. On occasion a bride who is aware of this practice might request her wedding dress to be made from old garments (Participant 5, 2013:6-7). In addition to the above, in the manufacturing of products Sub-unit 2

concentrates on using only shell buttons, YKK zips and natural beads for beading.[99] Hand embroidery, using cotton thread, is used as embellishment; however Participant 6 (2013:4) states that embellishments are kept to a minimum. Natural and organic fabric off-cuts are collected and used to make other products. Some of these products, such as the recycled paper made from fabric, is bought back and sold in the shop (Participant 5, 2013:8).

iii. From Factory to retail

Sub-unit 2 predominantly sells from the venue where some of the products are produced and, as already mentioned, all out-sourced production is done locally.

iv. Ethical Fashion

One of the strategic pointers for Sub-unit 2 is the recycling of natural fabrics off-cuts. These are given to two paper making NGO's and this assists in creating informal employment opportunities. In addition, the shop sells wood carvings made by a local crafter. The CMT manufacturing companies that the sub-unit uses are all known personally by Participant 5 and are small owner managed. Both Participant s of Sub-unit 2 felt assured that no unethical labour practices take place and consider it to represent Fair Trade conditions (Participant 5, 2013:3; Participant 6, 2013:4).

v. Zero Waste and reduce waste

One of the aspects underpinning the strategic objectives of the sub-unit is reducing waste; this is considered a main driver of praxis and is achieved by a constant consideration when cutting (Participant 5, 2013:8; Document 9, 2013). In addition, Participant 6, one of the two designers of the sub-unit, has experimented with zero-waste principles, as suggested by Fletcher and Grose (2012:44). Participant 6 (2013:3) mentions:

> …actually yes, I always try to keep a rating to a minimum, and there have been quite a lot of patterns that I have been working on where there's almost no wastage.

vi. Informing the consumer

Both participants of Sub-unit 2 agree that, in general, the consumer is not that concerned with the environmentally sustainable praxis of the sub-unit. However, both participants agree that this is an important aspect to consider. Participant 5 (2013:2) mentions that they do not tell or inform the consumer nearly enough, whereas Participant 6 (2013:7) suggests, that the consumer should be more awareness and conscious of environmentally sustainable practices with regard to clothing. She does mention that consumers are told of best practice laundering methods (Participant 6, 2013:7). In addition, when interviewed, Participant 6 (2013:5) speaks

[99] YKK Group, who manufactures the YKK zips, consider themselves a socially responsible company (Document 14, 2014:17).

about the advantages of natural and organic fabrics. The sub-unit's durability, longevity and repair approach to their products are in themselves communicating with the consumer (Participant 6, 2013:7).

7.3.3 Strategy of Sub-unit 3

7.3.3.1 The drivers for environmental sustainability

Based on the new suggested paradigm for environmental sustainability in the industry discussed in Chapter 5, and on data refinement, the focus of Sub-unit 2 is predominantly on level 2, as presented in Figure 7.12.[100] In level 2 the focus is on results and the emphasis lies on substituting parts and processes.

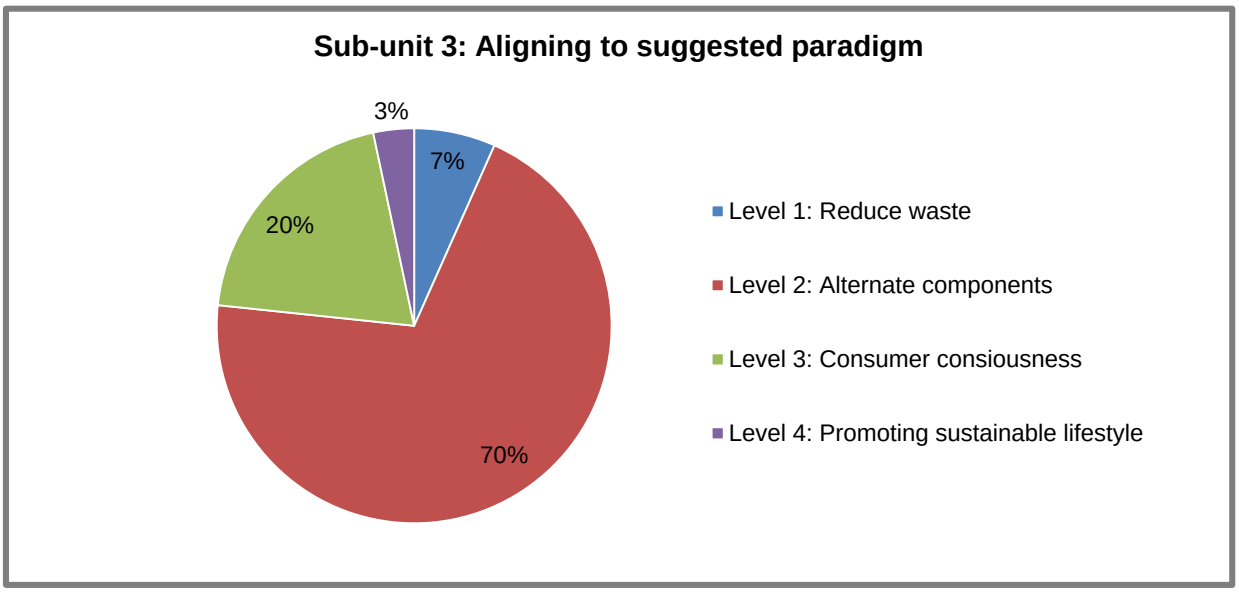


Figure 7.12: Sub-unit 3 – Alignment to suggested paradigm

Participant 7 (2013:2-3) mentions that, due to the lack of availability of suitable environmentally sustainable fabrics, the focus of Sub-unit 3 is on recycling and practices in manufacturing. The larger emphasis on level 3 is because Participant 7 (2013:8) is often seen to promote a holistic approach to environmental sustainability.

The drivers of Sub-unit 3's strategy for environmental sustainability are divided into four areas, namely, fabrication, approach, transparency and honesty, and creating awareness. The nature of the fashion product allows for experimentation with different fabrics. One such example is the indigenous South African 'boer' goat project, which not only could be considered as an

[100] Text in the refined conceptual framework was placed against a level. The corresponding text was colour coded, and it is the number per colour, per level, that represents the percentages in the graph. The spreadsheet with data is held by the researcher in a secure location. It was thus possible to develop a sense of where the prominence of Sub-unit 3 was on the Armstrong and LeHew suggested paradigm.

environmentally sustainable fabric once the fine down is processed, but the project also advocates a socially responsible viewpoint. Participant 7 (2013:3) emphasises the challenge of finding suitable environmentally sustainable fabrics for the label that the consumer would deem suitable. Currently most fabrics, sustainable or otherwise, are imported. This factor led the sub-unit to a re-aligned focus, other than fabric, and now entails regional (in Africa) manufacturing, reducing waste and recycling efforts.

The second area – approach – is based in the sub-unit's alignment to Africa. Participant 7 (2013:9) mentions:

> …you have to identify – what is it I stand for, and how do I spread that message . . . and so for me the eco thing is about consciousness, it's about from the start – from the naming of my label, to the fact that it's based in Africa, to the fact that its inspired by Africa, to how organic fits in with that. You know what I mean . . . you build, build and build around that.

The owner/designer of sub-unit 3 is a strong public advocator of environmental consideration, which stems from personal belief in environmental sustainability and in Africa. The above-mentioned is evident in the explanation given about the use of indigenous South African 'boer' goat cashmere and the naming of the label. Participant 7 is regularly asked to speak at public platforms on the topic of environmental sustainability at which he takes a holistic approach and he considers this a way of life. Participant 7 (2013:8) mentions:

> …let's just talk about doing things to try and make a difference, because ultimately that's what it all should be about.

It is also through Participant 7's public speaking that he creates an awareness of environmental sustainability, referring to a change in lifestyle. Participant 7 (2013:8) mentions that at talks he suggests investment in clothing as opposed to buying clothing that is quickly discarded, better laundering practices in clothing care, and consideration for the lifecycle of clothing products. During these interviews Participant 7 (2013:5) often refers to 'telling the stories', and the importance of telling the consumer about where a product comes from.[101] An example of informing the consumer about the product is evident in the product presented in Figure 7.13 below.

[101] One such story is the indigenous goat cashmere that was used for the winter 2013 collection.

Product	Hand embellishment and detail
Fabric	70% bamboo viscose, 30% organic cotton, hand embellished around neckline
description	…this t-shirt was made by a socially responsible manufacturer. The t-shirt was then hand embellished by a group of rural women in South Africa.

Figure 7.13: Women's t-shirt
(Product 25(b), n.d.)

7.3.3.2 The brand and environmental sustainability

Participant 7 (2013:3) positions the brand as a luxury fashion brand with a focus on environmental sustainability, referred to as an 'eco-lux' brand. The brand is based in, and inspired by, a lake in the North of South Africa, in the province of Limpopo (Document 18, n.d.). The brand name is a Tshivenda word that represents tranquillity and a place of rest.[102] The African anchor is significant to the brand. The fact that it is an eco-lux label, requires that the product follows mainstream fashion and thus necessitates that the designer considers style, shape and fabrication carefully. Participant 7 (2013:3-4) mentions that, foremost, it is a fashion brand and needs to sell, and only in fashion shows could he use imported treated mohair due to the cost of the fabric. This is also the reason why suitable environmentally sustainable fabrics are not available or affordable for the products produced by the sub-unit. The fashion product also allows experimentation such as with the indigenous South African 'boer' goat cashmere used in a winter collection, as shown in Figures 7.14(a) and 7.14(b).

[102] The brand is named after the lake which is also a sacred site for the vhaVenda tribe (Document 18, n.d.).

Figure 7.14(a)**:**
Autumn/Winter 2014, goat cashmere
(SA Fashion week)
(Product 28(a), n.d.)

Figure 7.14(b)**:**
Autumn/Winter 2014, eco-leather
(SA Fashion week)
(Product 28(b), n.d.)

At the interview with Sub-unit 3, an indigenous South African 'boer' goat cashmere product was shown, as in Figure 7.14(a), and an eco-leather product similar to Figure 7.14(b) (Participant 7, 2013:5). According to Participant 7 (2013:8) the swing tag used on the products informs the consumer of the eco-friendliness of the product. The brand also presented a collection at a leading retailer (Document 21, n.d.)

Figure 7.15:
Cashmere sweater dress
(Document 21, n.d.)

In an article (Document 22, 2012), the designer provides information on a range of t-shirts for sale on the web. In the article he describes the difference between conventionally grown cotton and the bamboo and organic cotton that is used for the t-shirt. The t-shirt is described as an 'eco-chic' product.

Figure 7.16: Tribalism t-shirt
(Product 25(c), n.d.)

The owner/designer of Sub-unit 3 is a well-known public figure and is thus asked to speak at various fora about sustainability. Several interviews and articles reflect his association with eco-fashion, and the label is referred to as South Africa's premier eco-lux and ethical label (Document 19, 2013; Document 22, 2012; Document 23, n.d.).

7.3.3.3 The target market and environmental sustainability

Participant 7 mentions that the consumer is interested in the label because it is a high fashion label and not necessarily because of the association with environmental sustainability, and he is, on occasion, questioned on the eco-ness of the label (Participant 7, 2013:8). According to Participant 7 (2013:6), eco-products are a 'nice to have', but not a motivating factor for the South African consumer, and, in general, the consumer does not have foresight.

7.3.3.4 Environmentally sustainable praxis

The praxis is divided into the following categories based on Figure 4.2.[103]

The categories include:

i. fibre and fabric development;
ii. product development;
iii. from factory to retail;
iv. ethical fashion;

[103] Figure 4.2 indicates where environmental sustainability is possible in product development, refer to Section 4.1.

v. reducing waste; and
vi. informing the consumer.

i. Fibre and fabric development

Participant 7 (2013:3) states very clearly that not all eco-fabrics are suitable for the eco-lux fashion label. In addition to the non-availability of environmentally sustainable local fabrics, Participant 7 (2013:3) mentions that South Africa does not have the capability to produce eco-fabrics that fit the need of the fashion industry. Approximately only ten to twenty percent of environmentally sustainable fabrics used by the sub-unit are produced locally, the remainder are imported. A variety of synthetic, natural and environmentally sustainable fabrics are used. In addition, Sub-unit 3 experiments with different types of new fabrics. One such fabric is the indigenous South African 'boer' goat hair that can be considered an environmentally sustainable alternative to cashmere (Participant 7, 2013:2; Document 25, 2004; Document 26, 2005; Document 27, n.d.). Other fabrics that are used are eco-leather, pile-treated mohair, organic cotton, bamboo, hemp and hemp-silk. Fabrics are imported form Korea, China and Turkey. During the interview, Participant 7 (2013:1,4-5) showed a number of examples of products that were used in recent collections, such as a short trouser made of a fabric used for scuba suits, a 100% synthetic fabric, as organic cotton would not have been able to provide similar stretch and shape to the trouser. Similarly, the pile-treated mohair was a fabric developed in Italy, and thus is an expensive fabric.[104] Organic t-shirts are sold via the website and are made from a seventy present bamboo and thirty present organic cotton mixture, as presented in Figure 7.13 and Figure 7.16.

ii. Product development

Sub-unit 3 is a one-man operation, where all products are designed by Participant 7 and produced through CMT enterprises. The main focus of this label is its anchor in Africa, and thus all products are produced in African countries, namely, South Africa, Kenya, Mozambique and Lesotho. A focus in manufacturing is to reduce waste as much as possible. Waste fabrics are also returned from the CMT factories and are either distributed or used for accessories, as presented in Figure 7.17.

iii. From Factory to retail

Sub-unit 3 retails on various local and international platforms, on-line platforms, such as the sub-unit's own website and other on-line sites such as STYLE36, and by retailing through larger retail outlets (Document 18, n.d; Document 21, n.d.).

[104] Participant 7 (2013:5) mentions that the cost of this material in R1000 per metre.

iv. Ethical Fashion

According to Participant 7 (2013:3), the approach taken by the sub-unit, is based on ethics and is the foundation of the sub-unit. On the sub-unit's website, mention is made of the philosophy of the label which is that the clothing should be a reflection of one's conscience (Document 19, n.d.). This philosophy also forms the basis for the sub-unit's approach with regard to environmental sustainability:

> …that is why we are committed to sustainability not only through the materials we select for every piece we create and our approach to our design, but in every aspect of our work.

v. Reduce waste

Reducing waste, as mentioned above, is an important focus of the sub-unit. Waste fabrics are returned from the CMT companies that produce the final products and they are then re-distributed or repurposed for accessories. An example of such a product, as shown in Figure 7.17, is sold via the sub-unit's website and was also one of the examples viewed at the interview (Document 18, n.d.; Participant 7, 2013:1,4).

Figure 7.17: Fabric urchin (Product 25(a), n.d.)

The product uses waste fabrics that are re-enforced with acetate and then cut into interesting geometric shapes. The above hand-made 'fabric urchin' was inspired by sea anemones.

vi. Informing the consumer

Sub-unit 3 communicates with a broader audience through interviews, writing articles, information on the sub-unit's website and public speaking. Participant 7 (2013:8) takes a

holistic approach to environmental sustainability in the fashion industry and addresses relevant issues (Participant 7, 2013:8; Document 19, 2013; Document 22, 2012).

Examples are:

- Changing lifestyles and considering environmental sustainable issues in relation to clothing and fashion.
- Investing money in buying clothing instead of only being aware of sustainability.
- Encouraging consciousness about environmental sustainability through laundering and disposal of clothing items.

Methods of communication are the following:

- Swing tags on the products made from environmentally sustainable fabrics that are free from insecticides and pesticides.
- Interviews conducted with the owner/designer of Sub-unit 3.
- Articles written by the owner and designer of Sub-unit 3 posted on the website *Brandambassadors*.
- Information placed on the sub-unit's website that details the unit's philosophy and explains the focus on Africa that the name of the label signifies.

A key feature of the owner/designer of Sub-unit 3 is that he is actually a journalist and thus writing and, what he refers to as *telling stories*, comes naturally and is evident in the focus of the label and how the brand needs to align to nature. He (Participant 7, 2013:6) mentions:

> …to have foresight about the future, it is really important, because there are so many things. We talk about things we really love about South Africa, so it's the climate, it's the fact that we can go into nature. Beyond the fact that people just rattle off those things you know . . . and that we've got this fauna and flora that we've got to celebrate . . . how beautiful it is to be out in the sunshine. But they don't realise about the harm they're causing to that, that in the future they're not going to have that. And how do you take that step to explain to people that because they don't really think about what's going to happen two years down the track . . . we don't have foresight.

The above aligns to the focus of the brand by the naming of the label and by being based in and inspired by Africa (Participant 7, 2013:9).

7.3.3.5 Future strategies

Two issues are prevalent in the interview with Sub-unit 3, namely, what the industry lacks and where the consumer needs to change. Participant 7 (3013:8) is clear about what is needed in the fashion Industry of South Africa, namely, a better understanding of the power of organic fabrics by designers and manufacturers, and the industry needs access to information. Participant 7 (2013:3) mentions the lack of available or suitable environmentally sustainable fabrics for a high fashion label (eco-lux label) such as is produced by the sub-unit. The South African consumer needs to be more aware of environmental sustainability with regard to the clothing they buy and needs a change of mind-set with regard to the environmental and issues that relate to the purchase, wear and disposal of clothing products.

7.3.4 Summary of key points: Strategy

The key points of each sub-unit's strategy are discussed and the discussion follows with a schematic presentation of the key points. The strategies applied by Sub-unit 1, with regard to environmental sustainability, focus on three aspects: firstly through brand positioning, secondly, through controlling procurement, manufacture and retail, and thirdly, by aligning and developing their holistic approach through investment in social practices within the sub-unit. The key points that emerge in the first aspect, namely brand positioning, are the perceived image of the two brands the sub-unit produces, and the how these brands are used to advocate the sub-unit's approach to environmental sustainability and ethics.

The ethical approach is further emphasised in the second aspect, namely control of procurement, manufacture and retail. Specific strategies with regard to internal practices and the sub-unit's approach of practice towards the supply chain emerge as an important key point. Evidence of the above can be seen in how and who form part of the supply chain, and control measures that are put in place to affect what the unit refers to as 'knowing what the product consists of'. This aspect leads to honest communication to their consumer base through information that is made available to the consumer and leads to the third aspect, namely, advocating the sub-unit's approach to ethics and environmental sustainability.

Figure 7.18, below, is a visual representation of the key points that inform the strategies applied by Sub-unit 1.

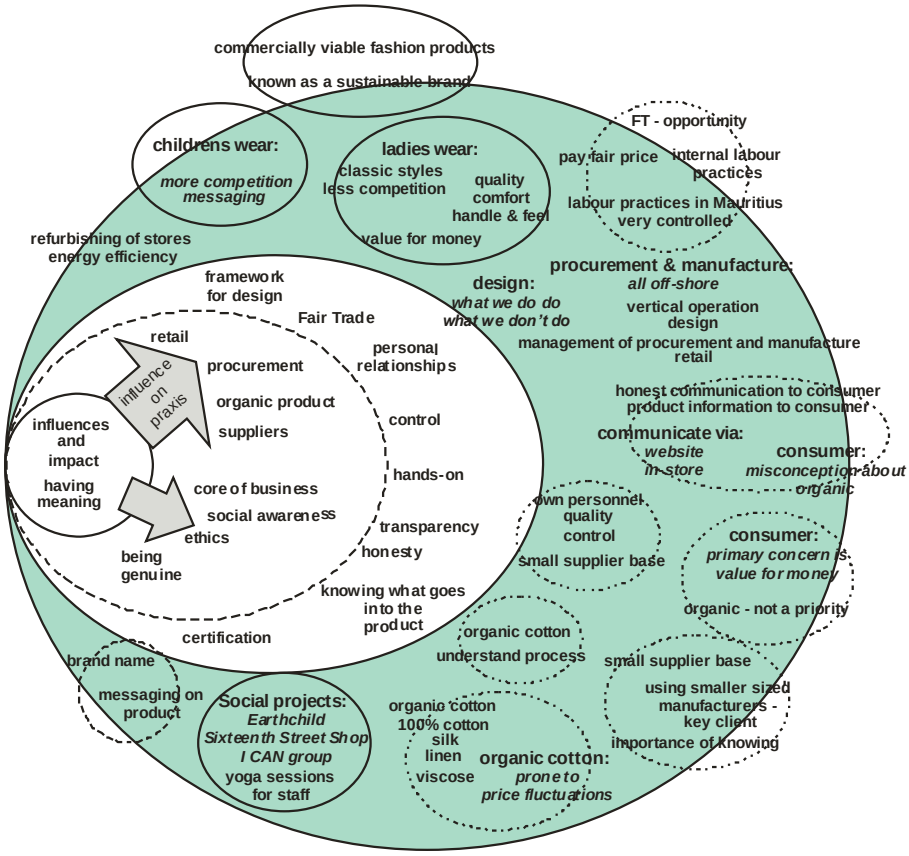


Figure 7.18: Summary of key points of *strategy* for Sub-unit 1 (developed by author)

The strategies with regard to environmental sustainability applied by Sub-unit 2 are based on four aspects, namely, the components which the products consist of, reduce, reuse and recycle. In the first aspect, components, the strategy is on firstly finding organic fabrics or natural fabrics. The focus of organic or natural components is evident in the sub-unit's experimental approach; its involvement in the development of environmentally sustainable fabrics and its frustration about the diminishing local textile industry with regard to environmentally sustainable fabrics. Aligned to the above is keeping a low carbon footprint.

The second aspect (reduce) emerges in the approach by the designer with regard to pattern construction and cutting, which also aligns to the third aspect (reuse) as is evident in some of the bridal wear. The fourth aspect (recycle) aligns to the socially responsible approach in the sub-unit's vision, in the paper made from recycled natural and organic off-cuts and the non-clothing related products sold by Sub-unit 2. Figure 7.19, below, is a visual representation of the key points that inform the strategies applied by Sub-unit 2.

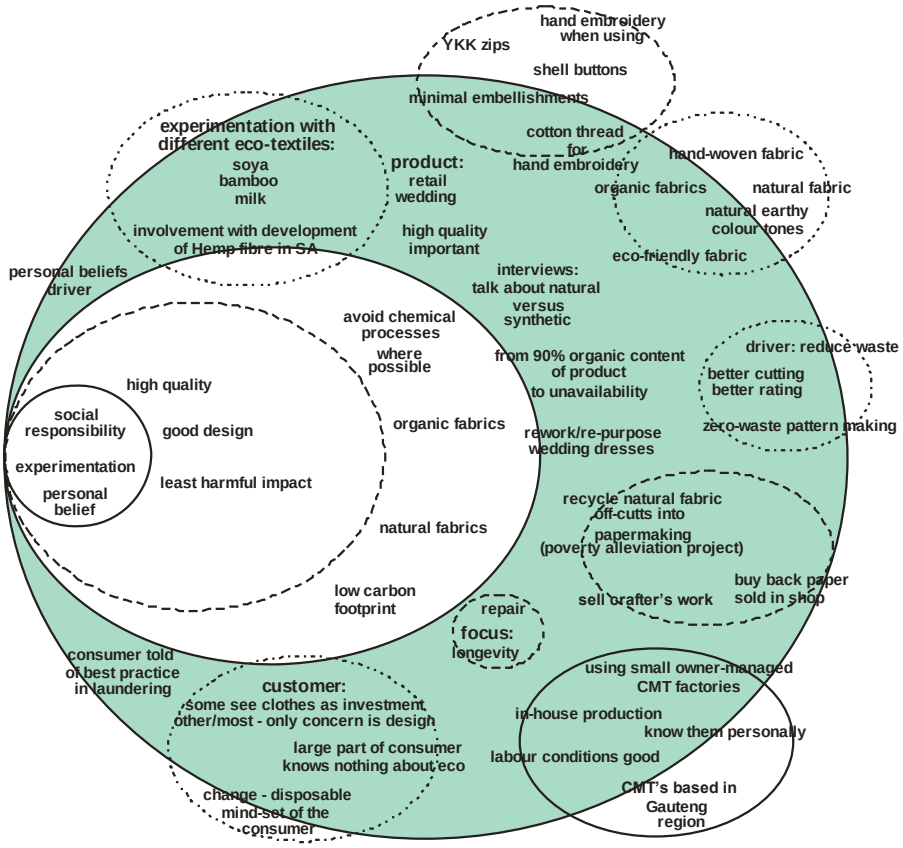


Figure 7.19: Summary of key points of *strategy* for Sub-unit 2
(developed by author)

The strategies with regard to environmental sustainability applied by Sub-unit 3 can be summarised in two aspects: firstly, brand position and its alignment to environmental sustainability, and secondly, the owner/designer of Sub-unit 3's public profile and approach to ethics and the environment. A very clear defining of the brand's position within the South African fashion industry emerges from the analysis and indicates how environmental sustainability and an ethical approach can align to the eco-lux label. The type of product also allows experimentation with different fabrics. The lack of suitable environmentally friendly fabrics provides a platform for Sub-unit 3 to develop the aligned strategy of reducing, recycling and taking a holistic lifestyle approach. The second aspect, the public profile, provides a platform through interviews and articles, from where Sub-unit 3 advocates caring for the environment. It is specifically in these public platforms that Sub-unit 3 encourages a holistic lifestyle based on environmental sustainability.

Figure 7.20, below, is a visual representation of the key points that inform the strategies applied by Sub-unit 3.

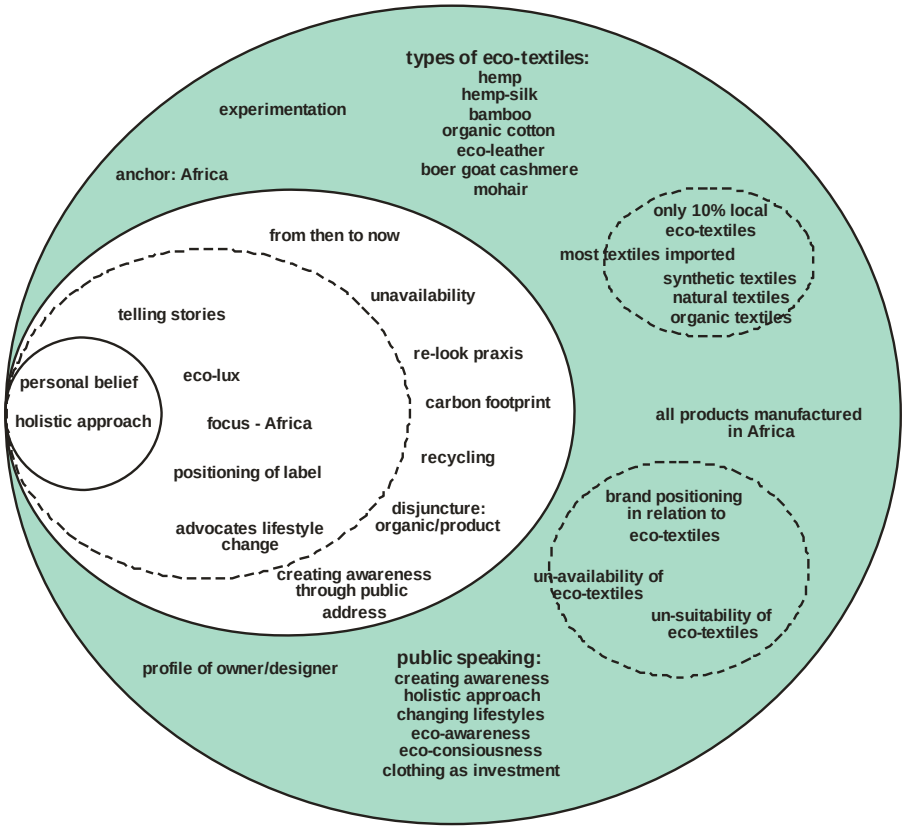


Figure 7.20: Summary of key points of *strategy* for Sub-unit 3 (developed by author)

In this sub-section the data gathered for all the sub-units with regard to strategy was analysed in order to understand all the sub-units' strategies for implementing environmental sustainability. The following sub-section provides an analysis of the systems with regard to environmental sustainability applied by each sub-unit.

7.4 DECSRIBING THE SYSTEMS

In this sub-section the data gathered from all the sub-units with regard to systems are analysed in order to comprehend all the sub-units' systems for implementing environmental sustainability. Systems are discussed by reviewing the data with regard to establishing new partnerships, the product life-cycle and fostering change, informing the consumer, and changing habits. The section concludes with a summary of the systems of all three sub-units, and a diagram is developed that will summarise the information.

7.4.1 Systems of Sub-unit 1

7.4.1.1 Establishing new partnerships

The following partnerships aid the sub-unit with the established strategies. Firstly, Sub-unit 1 states that, when using organic cotton fabrics, only certified organic fabrics are used. In this regard two specific mills provide the above-mentioned product. Secondly, to facilitate their approach of a 'hands-on' practice, they choose smaller manufacturers where the sub-unit is regarded as a key customer. The above-mentioned also provides opportunities for more control and allows greater influence over manufacturing processes (Participant 2, 2013:7). Two manufacturers are mentioned as their main suppliers of finished product. Participant 2 (2013:7) highlights the fact that using smaller manufacturers means that there is a scope to develop formalised processes, which are suggested for future engagement:

> …so that's probably the biggest short term opportunity is to get the garment manufacturers into that mind-set and….to get some, call it, some more formalisation around that.

The association with the socially responsible manufacturer in Madagascar mentioned by Participant 1 (2013:16) and Participant 2 (2013:7) aligns to the sub-unit's own approach of social responsibility. Participant 4 (2013:2) confirms the above by stating that she chose to work at Sub-unit 1 because of it its business ethic and socially responsible approach.

7.4.1 2 Systems in praxis

Systems in praxis for Sub-unit 1 are divided into three categories, namely, suppliers, products, and staff.

i. Suppliers

The procurement process that the sub-unit applies and that is aligned to their 'hands-on' approach is through direct sourcing from internally approved and dedicated channels. 'Hands-on' suggests that the sub-unit secures the fabrics and specific trims that should be used for manufacture, instead of leaving the choice of supplier, fabric and trims selection in the hands of the manufacturer. Participant 2 (2013:4) argues that this is fairly unique:

> …we don't give them the ability to make those decisions. Which is unusual? I think you'll find that it is quite unusual; a lot of guys would just say . . . it must look like this . . . make it… .

The above requires more input from the sub-unit. Participant 1 (2013:19) refers to the above as the second layer of the sub-unit's vertical operation - that of management of procurement and manufacture. This 'management' process is achieved, firstly, through developing personal relationships with suppliers and manufacturers. Secondly, it is achieved through specific staff such as the Head Supply Chain Manager who makes detailed visits to the manufactures several times per year, and by having their own Quality Controllers on the production floor at

the manufacturing plants (Participant 2, 2013:3). In addition, quality is ensured by pre-production checks, quality checks during manufacturing and shipments inspections. All of the above ensures that the sub-unit can justify that they know what the product consists of, a key aspect highlighted in their vision.

ii. Product

Participant 1 (2013:15;16;18) mentions that several aspects, such as brand positioning, brand reputation and types of product, inform the design and product development process. According to Participant 1, the designers of the two labels developed by Sub-unit 1 have a holistic framework that informs design. Participant 1 (2013:a5) suggests:

> So then if we consider on how it impacts on our designers . . . all the brand name, the value, the cultures, the culture of the business has given the designers a framework… .

The above implies that the product, specifically the children's-wear label, does not always follow fashion trends in children's wear, but that certain ethical considerations inform the design, which aligns to the 'have meaning' aspect mentioned in sub-unit discussion on vision. This framework provides guidance to designers with regard to that which is acceptable, and that which is not, for example, not using black in children's wear and not having images such as skulls on children's clothing (Participant 1, 2013:15). This framework seemingly does not apply as strictly to the ladies'-wear label. The ladies'-wear label is aimed at a more mature market and thus does not follow high fashion styles. The market, as explained by Participant 1 (2013:17) is sensitive to sudden changes and thus more classic styles are part of the collection. The majority of the styles are in cotton knit fabric.

Both Participant 1 (2013:15) and Participant 2 (2013:3) refer to 'keeping to the formula' in their respective interviews. The above refers to the use of organic cotton and managing the fluctuation in the price of cotton and the rand/dollar exchange rate. Where Participant 3 (2013:3) reflects that in the past few years, noticeably fewer products are made of organic cotton, management argues that the number of products that are made of organic cotton is tempered to accommodate the fluctuations in price and availability of fabric (Participant 1 (2013:15-16; Participant 2, 2013:3). Both emphasise that the handle and quality of the product is more important and that price fluctuation should not affect quality of the product, nor the handle and quality of the fabric (Participant 2, 2013:3).

Three of the four participants of sub-unit agree refer to the fact that the quality of the products is a key aspect that informs brand identity. However, to ensure that the consumer is not incorrectly informed, the swing ticket attached to each garment, or the product information supplied on the web-site, accurately reflects the fabric content of the product, as presented in the example in Figure 7.21(a), Figure 7.21(b) and Figure 7.21(c) (Document 3, 2009; Document 4, n.d.; Product 5, n.d.; Product 29, n.d.; Product 6, n.d.). The example is taken from

the sub-unit's ladies'-wear website presenting their ladies dresses. The example, as shown in Figure 7.21(a), Figure 7.21(b) and Figure 7.21(c), takes three different types of dresses and provides information on fabric content, style description, a photograph of the style and a description of the wash and care information.

Information on fabric	Stylish A-line knee length dress The knife pleat and front yoke detail is what makes this dress unique and elegant. The functional pocket adds comfort to the dress
Style description	Made out of a cotton linen blend, which is breathable and lightweight.
Wash/care information	Think Earth, save energy, machine wash at 30C/ Do not bleach/ Do not dry clean/ Do not tumble dry/ Cool Iron/ Do not handwash/ Line dry inside-out/ Wash with like colours/ Keep out of direct sunlight/ Made to fade
Photo of style	

Figure 7.21(a): A-line dress
(Product 5, n.d.)

Information on fabric	Classic, above the knee - vest dress. The elastane adds a bit of stretch for comfort and movement. A core item of a […] style. Available in seasonal colours
Style description	94% organic cotton and 6% elastane
Wash/care information	Think Earth, save energy, machine wash at 30C/ Do not bleach/ Do not dry clean/ Do not tumble dry/ Cool Iron/ Do not handwash/ Line dry inside-out/ Wash with like colours/ Keep out of direct sunlight/ Made to fade
Photo of style	

Figure 7.21(b): Knee-vest dress
(Product 29, n.d.)

Information on fabric	Long sleeves in a classic slight a-line shape at a mid-thigh length, which is longer at the back. Round neckline with a detachable snood with mother of pearl button detail
Style description	100% cotton dress with a luxurious handle.
Wash/care information	Think Earth, save energy, machine wash at 30C/ Do not bleach/ Do not dry clean/ Do not tumble dry/ Cool Iron/ Do not handwash/ Line dry inside-out/ Wash with like colours/ Keep out of direct sunlight/ Made to fade
Photo of style	

Figure 7.21(c): A-line dress with detachable hood (Product 6, n.d.)

Participant 2 reiterates that Sub-unit 1 does not greenwash, an aspect Participant 3 warns against. He (Participant 2, 2013:5) states that:

> …[we are] strict about making sure that the wash-care represents the organic or non-organic status of the garment. So if it is an organic cotton, the wash-care label will say 'organic', if it is not - it will say 'cotton'. So the customer can make the decision for themselves because not all our product is made from organic cotton.

The wash and care information on all products is the same for the children's-wear labels as the ladies'-wear label (Document 5, n.d.; Document 6, n.d.). Participant 4 (2013:2) mentions that shell and coconut buttons (regarded as trims) are used on products, confirmed by the 'mother of pearl detail' on 7.21(c) (Document 6, n.d.).

iii. Staff

Two areas inform this category, firstly, how the sub-unit applies its own ethical approach to practice, and secondly, how the sub-unit ensures that the consumer is correctly informed. From management, the yoga classes provided to staff is an indication of ensuring a healthy working environment. Participant 1 (2013:15) states that although staff was initially sceptical regarding the approach of fostering social responsibility in-house through the establishment of the *iCAN* initiative, the *iCAN* initiative is now supported and driven by interested staff without management intervention. Management in turn supports the initiative through allowing time-off from work and by providing yoga classes during work time (Participant 1, 2013:15). Yoga is also a topic that is presented regularly on the blog on the sub-unit's website and similarly forms the basis of the Eartchild project (Participant 1, 2013:13; Document 5, n.d.).

The ethical approach to doing business is evident in the benefit staff receives. All staff members receive the same benefits with regard to pension plan, disability cover and life cover. Participant 2 (2013:16) mentions that this is taken from the same cost base across all staff, from CEO to sales person. He (Participant 2, 2013:16), also acknowledges that certain regulated labour laws hamper their wish to do more, such as the regulated laws with regard to retail staff salaries. Retail staff members receive training to enable them to communicate the environmentally sustainable approach of the sub-unit.

iv. Other praxis

Participant 2 (2013:16) mentions that the retail stores throughout the country are in the process of being refurbished. The refurbishing includes changing all lighting to LED lighting in an attempt to reduce energy consumption.

7.4.1.3 Systems in communication

The systems that Sub-unit 1 has in place can be aligned to what they do to enable effective communication to their customer, and where there is opportunity for better communication. Participant 2 (2013:4-5) mentions that knowing what goes into the product is part of what is communicated to the consumer, and this is based on being honest. A number of steps underpin the possibility of being honest. These include, firstly, the knowledge of the certification process for organic cotton, and the willingness to share this information with the consumer; secondly, not to make broad unsubstantiated statements regarding environmental sustainability, and thirdly, that the information reflected on the website, on the swing-tickets and information supplied at the retailer assists the customer to make an informed choice. Participant 2 (2013:10) mentions that the sub-unit provides training to their retail staff, in order to offer the correct information to the customer.

Participant 1 (2013:20) and Participant 2 (2013:12) agree that there is more opportunity to communicate to a broader consumer. The sub-unit's website provides information on the projects that have a social agenda, such as the Sixteenth Street project, the Earthchild project and the focus on yoga (Document 5, n.d.; Document 6, n.d.). The opportunity to provide the *behind the scenes stuff* in the retail store is limited (Participant 1, 2013:20). As Figures 7.6(a) and 7.6(b) depict, statements about the environment are done on the children's-wear products, but Participant 1 (2013:17) considers the ladies'-wear label as an under-explored space for making statements about environmental sustainability. At the time of the interview, Sub-unit 1 was investigating the possibility of a loyalty programme that would generate income for social projects, based on the 'wear good, feel good, do good' buy-line that was used for a number of years (Participant 1, 2013:20-21).

7.4.1.4 Design-led systems for change

Although Participant 1 (2013:18) highlights the role and importance of the designer and design process and the framework that the sub-unit provides its designers, design is perceived as the step for inspiration and not necessarily about knowing what it takes to develop environmentally sustainable fashion products. Participant 1 (2013:17-18) argues:

> …I don't know if there is any truth in a designer in a product thinking any differently if she's going organic or not or if she's going fair trade or not. I mean, this may sound like a very simplistic approach, but it's not about the product at the end of the day, it's about how one gets there. It's not about the destination, it's about the journey. But the destination is still a striped shirt.

Participant 1 (2013:18) states that the commercial viability of the products is of more importance than having the correct inspiration, and thus being inspired by nature does not necessarily yield the right results. In contrast to the above comment, Participant 4 (2013:4), a young designer, mentions that the consumer perceives the brand as 'being inspired by nature'. This designer, who joined the sub-unit because of its environmental and ethical approaches, mentions that a lesson learnt by her thus far is to understand what environmental sustainability means and what makes one product more eco-friendly than the next. She acknowledges that, although many people talk about environmental sustainability, very few really understand and recognise how environmental sustainability can be applied in the industry. She (Participant 4, 2013:3) indicates:

> …because I also understand that you don't get . . . eco-friendly fashion because it doesn't exist, you get friendlier fashion but it's . . . you can't have fashion and sustainability….

The other designer of Sub-unit 1 that was interviewed has a distinctly different approach to design, which made it difficult for her to align to the processes Sub-unit 1 ascribes to, with regard to design, procurement and manufacture. Although she acknowledges the importance of environmental sustainability, her approach seems to consider a different business model, where the focus is on longevity of product and less on producing volume fashion. She acknowledges that to design first and then source fabrics for the design awards a designer the opportunity to develop fabrics, she prefers to design for already purchased fabrics (Participant 3, 2013:3). She (Participant 3, 2013:3-4) refers to the latter as designing for fantasy, which limits the design tools available to the designer; the result is that you cannot design what you want. She (Participant 3, 2013:3) also finds the fabric range that is predominantly used for the ladies'-wear product range and target market, limiting. She considers herself as an eco-designer, yet mentions that the role of the fashion designer is completely the opposite. Participant 3 (2013:5) mentions that educating designers is essential and designers need to think before they create, instead of creating and then finding a solution for their creation. Participant 3 (2013:11) suggests that environmental sustainability can only be associated with

clothing, but not for fashion products. Participant 3's (2013:4) answer to if designing from an environmental approach requires a different approach to design was:

> …are you wired differently? Maybe I am, because I do go through the process from a different perspective completely.

7.4.2 Systems of Sub-unit 2

7.4.2.1 Establishing new partnerships

Forming partnerships is visible through the Sub-unit's interaction with its customer. This is a boutique, with part of its production and the creative and designers operating adjacent to the retail venue (Participant 6, 2013:5). Two of the practices necessitate closer interaction with their customer, namely, the repair of clothing as suggested by Participant 6 (2013:8) and the wedding dresses the sub-unit produces (Participant 5, 2013:6). As mentioned in 7.2, the sub-unit promotes their products through Facebook, a social media platform. Postings reviewed on Facebook not only include actual products, but also promote the look and feel of the type of products the sub-unit has to offer. In addition, other lifestyle types of products, such as the eco-journals (Figure 7.22), are posted on the Facebook page.

[Company name] eco journals are produced from sustainable resources and are both recyclable and biodegradable.

Figure 7.22:
Example of lifestyle posting
(Product 23, n.d.)

Sub-unit 2 has been involved with *Miss Earth* pageant (Participant 5, 2013:5), and with the celebrity event – *Against Fur* (Arden, 2014).

In addition to personal interaction with most customers, the sub-unit further establishes partnerships through personal interaction with small owner-managed CMT producers in the Gauteng area. Participant 5 (2013:3) specifically indicates involvement with the development of Hemp as an environmentally sustainable fabric for the South African fashion market. He (Participant 5, 2013:8,9) also creates partnerships with crafters through the recycling of natural and organic fabrics to paper, which is bought and sold in the boutique, through to selling hand-woven fabrics from a Cape Town weaver and wood carvings from a local crafter in the boutique.

7.4.2.2 Systems in praxis

Participant 5 (B1, 2013) states the systems in praxis that Sub-unit 2 aligns to are:

i. Collecting natural off-cuts

The two entities that the off-cuts are given to recycle the fabric waste into new products. Paper, one of the products, is bought back and sold in the boutique. In addition, recycled card for swing tags and business cards is used, although this is not the same recycled card and paper made from the waste fabric provided.

ii. Electricity usage

Participant 5 (Document 9, 2013) suggests the internal electricity usage is closely monitored in an attempt to reduce energy consumption, but Participant 6 (2013:8) mentions that, due to the varied sources used by the sub-unit to manufacture, it is difficult to estimate energy consumption overall.

iii. Ink cartridges and recycled paper and Hemp string

Donating old ink cartridges for recycling and re-use is mentioned by Participant 5 (Document 9, 2013) as another environmentally sustainable business practice. Recycled card is used for business cards and clothing swing tags. Printing on both sides of the paper reduces the amount of paper used, and using Hemp string aligns to the sub-unit's interest in using the environmentally sustainable Hemp fibre.

iv. Basic conditions of employment act

Conditions in the CMT manufacturers used by Sub-unit 2 are known, and the sub-unit considers these manufacturers comply with basic working conditions and fair labour practices (Participant 5, 2013:3; Participant 6, 2013:4). During the two-day SASTAC

workshop, fair labour conditions in the clothing manufacturing industry in South Africa were debated extensively and considered to be well-regulated and not a threat.[105]

v. Fabric printing

Participant 5 (Document 9, 2013) mentions that fabric printing with water-based ink-jet and pigment dyes is a more environmentally sustainable option than using chemical compounds for fabrics dying. Participant 6 (2013:3) suggests the use of natural dyes (refer to Figure 7.9) or using undyed fabrics.

vi. Organic thread

Participant 5 (2013:4) mentioned that during the sub-unit's involvement with Estethica, the use of organic thread was preferred. This is still listed by Participant 5 (B1, 2013) as praxis in the construction of clothing.

vii. Wood products

Wood seems to be a natural component to the interior and ambiance of the retail store and this is enhanced by the selling of wood-related products, such as the wood carvings made by the crafter. The Figure 7.23 below indicates the natural feeling that the sub-unit promotes.

Figure 7.23: Natural look and feel
(Product 21(b), n.d.)

[105] The researcher's personal notes taken at the SASTAC workshop, December 2014.

In addition to the above points, the sub-unit's experimentation with different natural and organic fabrics such as organic cotton, bamboo fibres, soya fibres and milk fibres are mentioned (Participant 5, 2013:6).

7.4.2.3 Systems in communication

Participant 6 (2013:5) specifically mentions personal interaction with customers, speaking at interviews and through fashion shows as methods to communicate environmental sustainability with regard to the products the sub-units sells.

7.4.2.4 Design-led systems for change

The focus of durability of product and repair of product is emphasised by Participant 6 (2013:8). Design-led change is embedded in the approach of Sub-unit 2 and the strong personal ethos of its staff (Participant 5, 2013:7; Participant 6, 2013:5). Consideration of the product and its components is fundamental, and is visible in the types of components used and processes applied, for example:

i. keeping ratings to a minimum;
ii. patternmaking that has almost no wastage;
iii. keeping off-cuts to re-purpose or re-use;
iv. keeping garment closures to an absolute minimum;
v. not having a lot of detail;
vi. not using plastic embellishment;
vii. if using beads, only using natural beads;
viii. hand embroidery using cotton thread;
ix. using shell buttons for garment closures; and
x. using YKK zips for garment closures.

Participant 6 (2013:4-5) suggests that consumers need to be more conscious of the products and should move away from a 'disposable mind-set', implying that selecting durable and quality products is a better choice. According to Participant 6 (2013:7) the consumer needs more information on the products they intend to purchase, to be able to make informed choices, but this can only be possible if the consumer becomes more conscious of environmental sustainability in clothing and fashion. Participant 5 (2013:7) mentions that working from an environmentally sustainable approach is something that the sub-unit would like to continue with. He (Participant 5, 2013:9) says:

> …I wish I could do it more, you know. As I say, because I can't do it a 100% so I try and do it as much as I can.

7.4.3 Systems of Sub-unit 3

7.4.3.1 Establishing new partnerships

Systems which support establishing partnerships for Sub-unit 3 are evident through two aspects. The first aspect is the need for, and lack of, suitable environmentally sustainable fabrics. Sub-unit 3 therefore forms partnerships with companies or initiatives that provide environmentally sustainable fabrics that are different to the norm, which aligns to the position of the brand as an eco-lux product. Participant 7 (2013:2) indicates that an association with Team Puma at the start of the development of eco-fabrics in 2005-2007 allowed experimentation with these eco-fabrics. Similarly, the connection with the indigenous South African 'boer' goat cashmere fabric allows the sub-unit to use fabrics that are somewhat different from generally used fabrics. Another example of this is the treated mohair fabric used in the winter collection.

The second aspect with regard to forming partnerships is the owner/designer of Sub-unit 3's public profile as seen in several articles, as well as in the public talks he is invited to give (Document 18, n.d; Document 19, 2013; Document 20, n.d.; Document 24, 2012; Participant 7, 2013:7). It is at these public interventions that Participant 7 (2013:8) aims to create public awareness of environmentally sustainable issues and create eco-awareness and eco-consciousness. In an interview with Participant 7 (Document 19, 2013), he expresses that:

> …I think more than anything I am a communicator – someone who uses words, and clothing, to spread a message. I am a thinker – but also someone who won't stop until I am happy with the manner in which the vision in my head has manifested in real life.

In addition, an association with Miss Earth of 2012, is an indication of a partnership developed due to the sub-unit's approach to environmental sustainability.[106] Another collection developed by Sub-unit 3, is the *summer#protest campaign,* based on the sub-unit's commitment to clothing with a conscience. The collection featured emotive slogans by artist Unathi Mkonto, and three prominent South African women who were asked to interpret the protest theme (Document 24, 2012). The clothes developed for the *summer#protest campaign* featured in leading retailers.

7.4.3.2 Systems in praxis

Participant 7 (2013) mentions that the unavailability and the unsuitability of environmentally friendly fabrics for the sub-unit's eco-lux label has forced the sub-unit to re-think its approach to being environmentally sustainable. In an interview with *Youth Village* (Document 19, 2013), Participant 7 notes that:

[106] Participant 7 mentioned his involvement with Miss Earth in a conversation after the interview (researcher personal notes).

> …hence we have taken a more holistic approach to being eco-friendly, through reducing waste, upcycling, reducing energy and upliftment projects. We don't claim that every piece from our label is purely eco-friendly, but what we do guarantee is that everything we create makes a positive difference to the planet.

Participant 7 (2013:9) emphasises the above by suggesting that the naming of the label, where the label is based in and inspired by Africa, demonstrates how environmental sustainability is connected with the planet; and this is what drives the label. In an article, the sub-unit is referred to as "…using ecologically sensitive and locally sourced materials…" (Document 24, 2012). Participant 7 (2013:3) emphasises the importance of ensuring profitability of the label. Aspects that inform the above-mentioned manifest themselves through:

i. reducing waste;
ii. recycling waste into new products;
iii. creating an awareness of the carbon footprint of the label by manufacturing products in Africa; and
iv. trying to use as much local fabric as possible.

7.4.3.3 Systems in communication

One of the main drivers for Sub-unit 3 is the power of 'telling stories'. Participant 7 (2013:5) emphasises the need, not only to inform the consumer of environmental sustainability, but to take a holistic view of the discussion. The sub-unit achieves this through several publications available on-line, through information on the sub-unit's website and through the public addresses held by the owner/designer of Sub-unit 3 (Document 18, n.d.; Document 19, 2013; Document 20, n.d.; Document 21, n.d.; Document 22, 2012; Document 23, n.d.; Participant 7, 2013:6-7). At the public addresses, Participant 7 promotes environmental sustainability as a way of life and discusses how one might approach fashion and the use of clothing differently (Participant 7, 2013:8).

Participant 7 (2013:8) remarks that labels placed on eco-products inform the consumer of how these are free from insecticides and pesticides. In an interview with the owner/designer of Sub-unit 3, he mentions:

> …besides spreading the message of living consciously with our environment, and being more ethical in our way of life, I am dedicated to spreading positive messages about African and other indigenous cultures in what I do.

The above quote also emphasises the aim of changing the lifestyle of the consumer, and the ethical base on which the label is founded, as referred to by Participant 7 (2013:9).

7.4.3.4 Design-led systems for change

Participant 7 (2013:7) suggests that there has to be an understanding of the power of using environmentally sustainable fabrics and designing from an environmentally sustainable approach, especially as, for the South African consumer, environmental sustainability is not a motivating factor. Participant 7 (2013:6) argues that the consumer does not have foresight,

and that understanding what impact clothes have on the environment needs to be promoted. His own approach is to view (and talk) about environmental sustainability from a holistic approach, about a way of life. According to Participant 7 (2013) the industry needs a different mind-set towards consuming fashion, awareness of environmental sustainability and access points for information on environmental sustainability, and an explanatory drive to provide information on environmental sustainability.

7.4.4 Summary of key points: Systems

There are three aspects that inform the steps taken to align to environmental sustainability in Sub-unit 1, namely, the brand, the product and the people. The first aspect, addresses understanding the target markets for the two respective brands and how the sub-unit's environmentally sustainable and ethical approach aligns to this, and manifests in a framework for design, using the children's-wear range to message, and is the focus of the ladies'-wear label. The second aspect – knowing what the product consists of and how it is manufactured – is possible through internally controlled steps by dedicated staff, processes that ensure control and understanding these processes, and detailed visits. This information is forwarded to the consumer via information systems such as information provided on swing tickets, information provided on the website, and through an informed retail staff. The third aspect – people – aligns to the sub-unit's approach to fair labour practices. The encouragement and support provided for staff's socially responsible projects as well as the benefits provided to staff speak to this. This aligns to what Participant 1 (2013) refers to as being a 'genuine company' that attracts like-minded individuals. Figure 7.24 below is a visual representation of the key points that informs the strategies applied by Sub-unit 1.

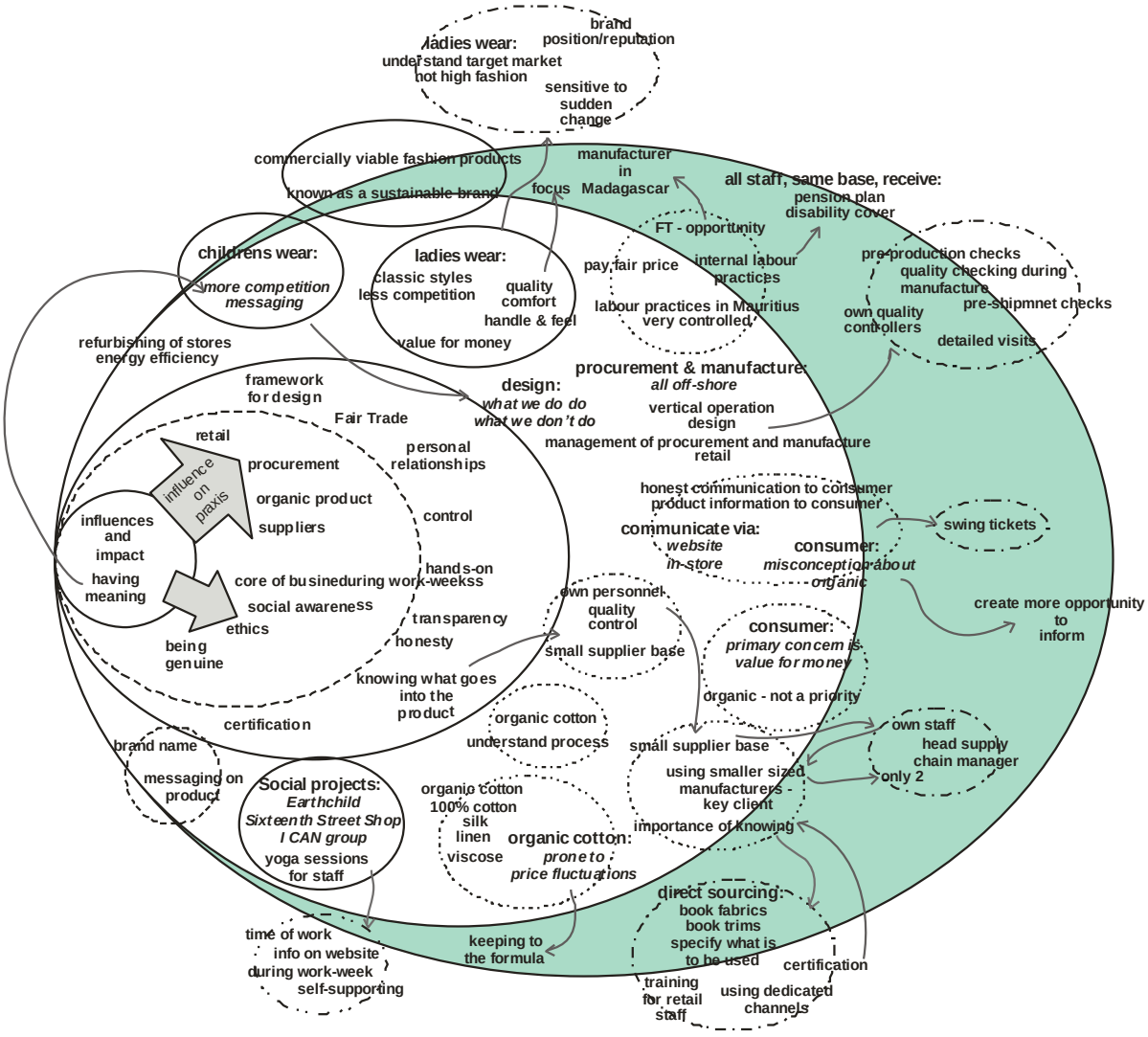


Figure 7.24: Summary of key points of *systems* for Sub-unit 1
(developed by author)

For Sub-unit 2, the two aspects that inform the steps taken to align to environmental sustainability are the practice and the sub-unit's interaction with people. Aligned to the natural look and feel of the products produced by Sub-unit 2 is the use of natural dyes or pigment dyes as opposed to the use of stronger chemical dyes. Other aspects that influence manufacturing, such as monitoring electricity and using organic thread, are mentioned. In addition, environmentally sustainable office practice is considered. The second aspect – personal interaction – is found in the manner in which the Sub-unit 2 interacts with their customers, and how the sub-unit, through social media, fashion shows and interviews, address lifestyle issues with regard to environmental sustainability. A number of design-led processes emerge. Figure 7.25 below is a visual representation of the key point that informs the strategies applied by Sub-unit 2.

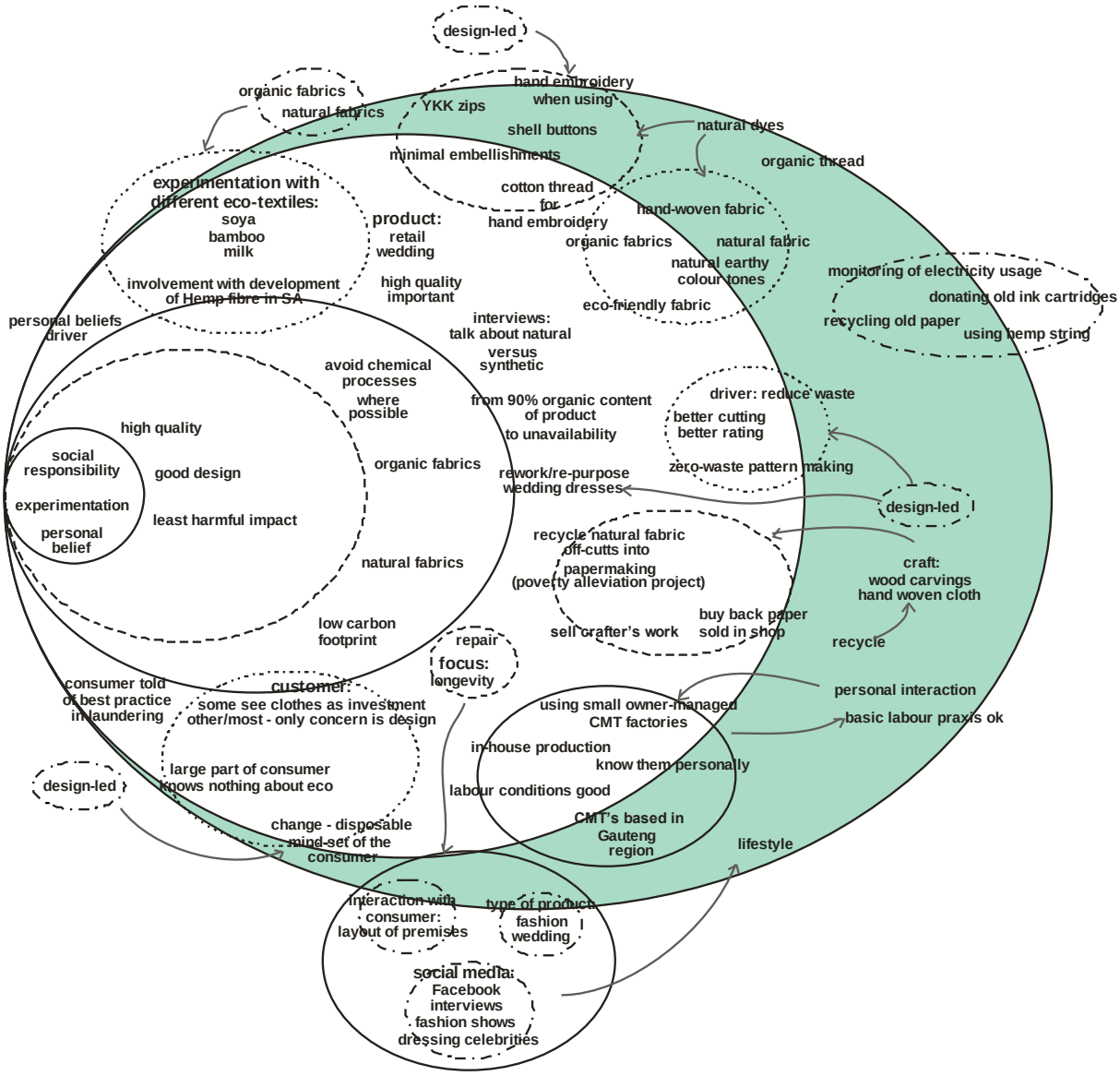


Figure 7.25: Summary of key points of *systems* for Sub-unit 2
(developed by author)

For Sub-unit 3 the systems with regard to environmental sustainability focus around brand positioning, the type of product the sub-unit produces and the creation of awareness through personal address and through the products. Positioning the brand is achieved through the type of products the sub-unit produces and the manner in which the sub-unit promotes the ethos of 'clothing with a conscience', such as in the *summer#protest* campaign. The above ads to the sub-unit's holistic approach to lifestyle and suggested lifestyle change. Figure 7.26 below is a visual representation of the key points that inform the strategies applied by Sub-unit 3.

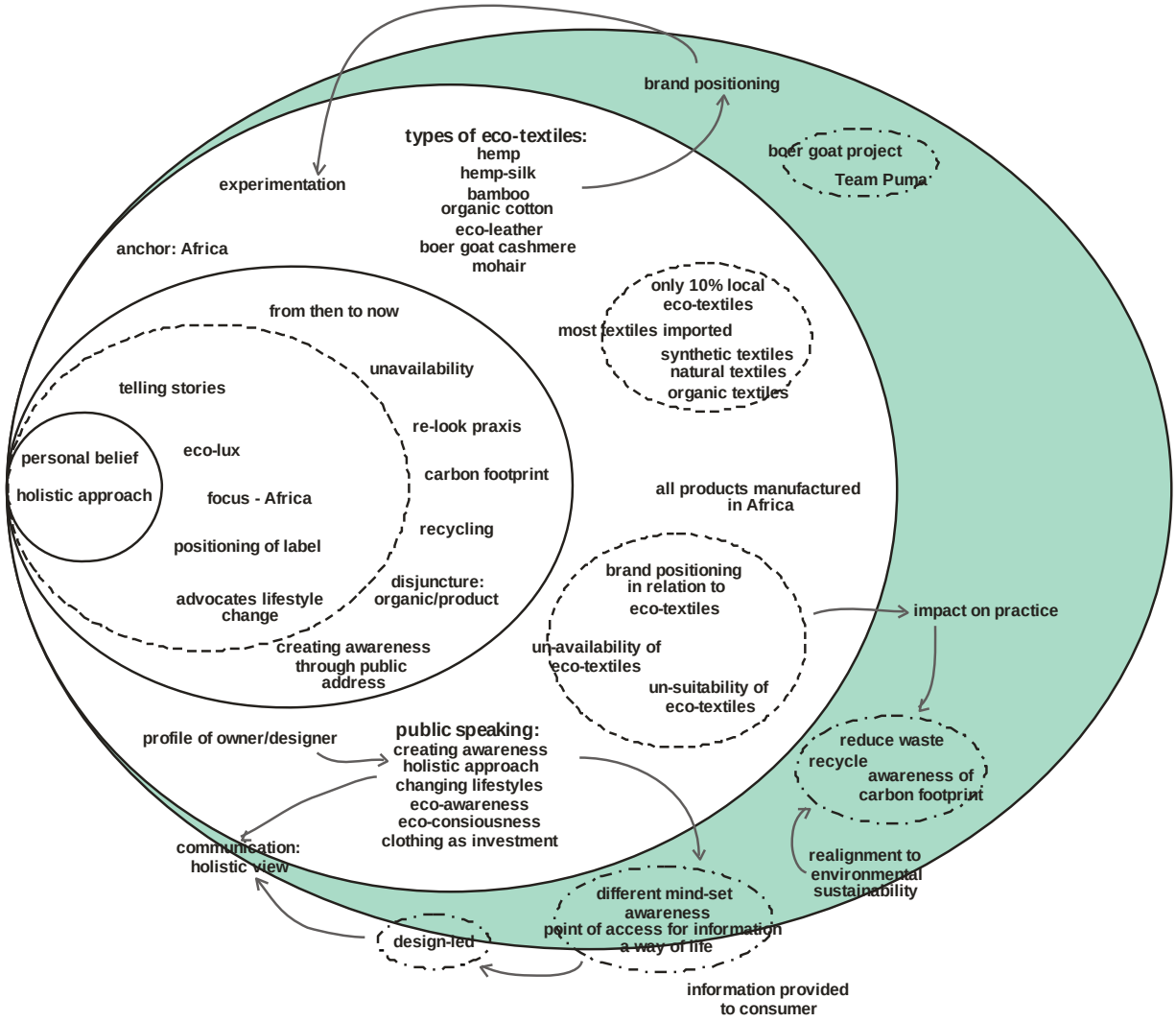


Figure 7.26 Summary of key points of *systems* for Sub-unit 3 (developed by author)

In this sub-section the data gathered for all the sub-units with regard to systems was analysed in order to comprehend all the sub-units' strategies for implementing environmental sustainability. The following sub-section provides a summary and discussion of this chapter.

7.5 SUMMARY AND DISCUSSION

In this chapter the analysis the findings of the data gathered from the interviews, supporting document and supporting products, was factually presented. The chapter started by briefly introducing the three sub-units that form part of the study with regard to the size, location and method of retail of each, and key aspects that define each sub-unit as a business entity. The reporting of the findings was structured to align to the design-driven concept proposal that was informed by the survey of scholarship and was used during the data gathering process as a guide. The three layers of the conceptual framework are vision, strategies and systems. The

findings therefore considered what the data reveals with regard to the sub-unit's approach to environmental sustainability (vision), the route they used to apply the vision (strategy) and the way these strategies are implemented (systems).

The first sub-section – vision – consists of three areas for discussion, namely the approach (environmental lens) to environmental sustainability, the areas of differentiation, and the eco-advantages for each of the sub-units. The second sub-section – strategy – consists of aspects such as the drivers that enable the implementation of environmental sustainability and the positioning of the brand and consumer consciousness with regard to environmental sustainability. Strategies for environmentally sustainable practice in each sub-unit are determined, which also consider costs associated with environmental sustainability and the future thereof for the South African fashion industry. The third sub-section – systems – includes what the data reveal regarding particular systems in place in each of the sub-units. Aspects that are considered include establishing new partnerships, products, informing the consumer, and design-led change.

Each sub-section concludes with a summary of key points that emerge in each of the sub-sub sections and a schematic representation of each of the notable key points for the respective sub-units. These schematic representations will be used to inform the following chapter, which specifically considers similar information that emerged in all three the sub-units. Similarly, the chapter will reveal information that is not evident throughout all the sub-units and information that seems to be lacking in all three the sub-units. This last aspect will lead to possible new recommendations. Chapter 8 therefore engages more deeply with the findings, through a discussion of the findings.

CHAPTER 8

DISCUSSION:

FINDINGS

As more designers begin to populate other sectors of the economy, totally new patterns of designing, of consumption and of behaviour are likely to evolve, for the range of issues and information that designers become exposed to is much broader than can be afforded through the simple lens of business and the market, and this inevitably informs practice.

Fletcher and Grose (2012:156).

The purpose of this chapter is to present a discussion of the findings by reviewing the summary of key points presented in Chapter 7, in order to consider similarities and differences between the three sub-units presented in the findings, as is presented in Figure 8.1, and aligns to Objective 6 of Sub-question 3.

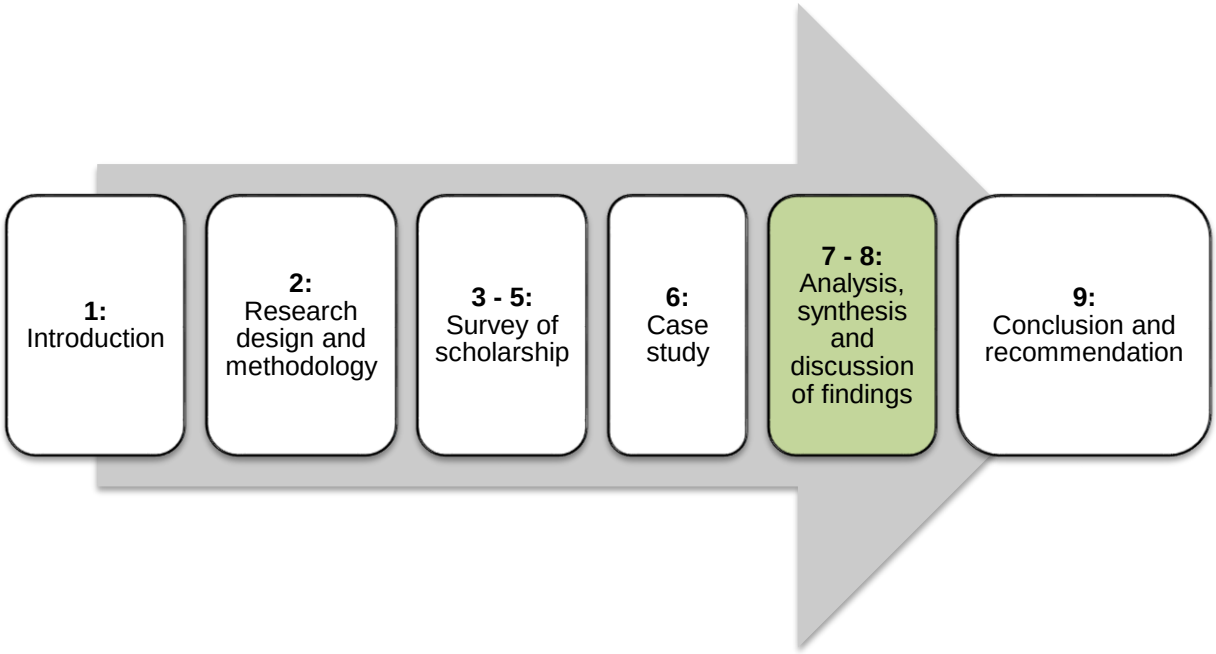


Figure 8.1: Schematic representation of case study – discussion of findings (developed by author)

The aim of this chapter is to consider similarities and differences between the three sub-units presented in the findings, as well as a discussion on design praxis. The chapter concludes with additional observations that emerged from the analysis.

The summary of key points is used to inform the discussion of the findings by exploring the similarities and differences that emerged from the findings. The schematic representations developed after each sub-section in Chapter 7 inform the schematic representation for this sub-section. The figure below (Figure 8.2) is a schematic representation of the similarities and differences between the three sub-units that formed part of the case study.

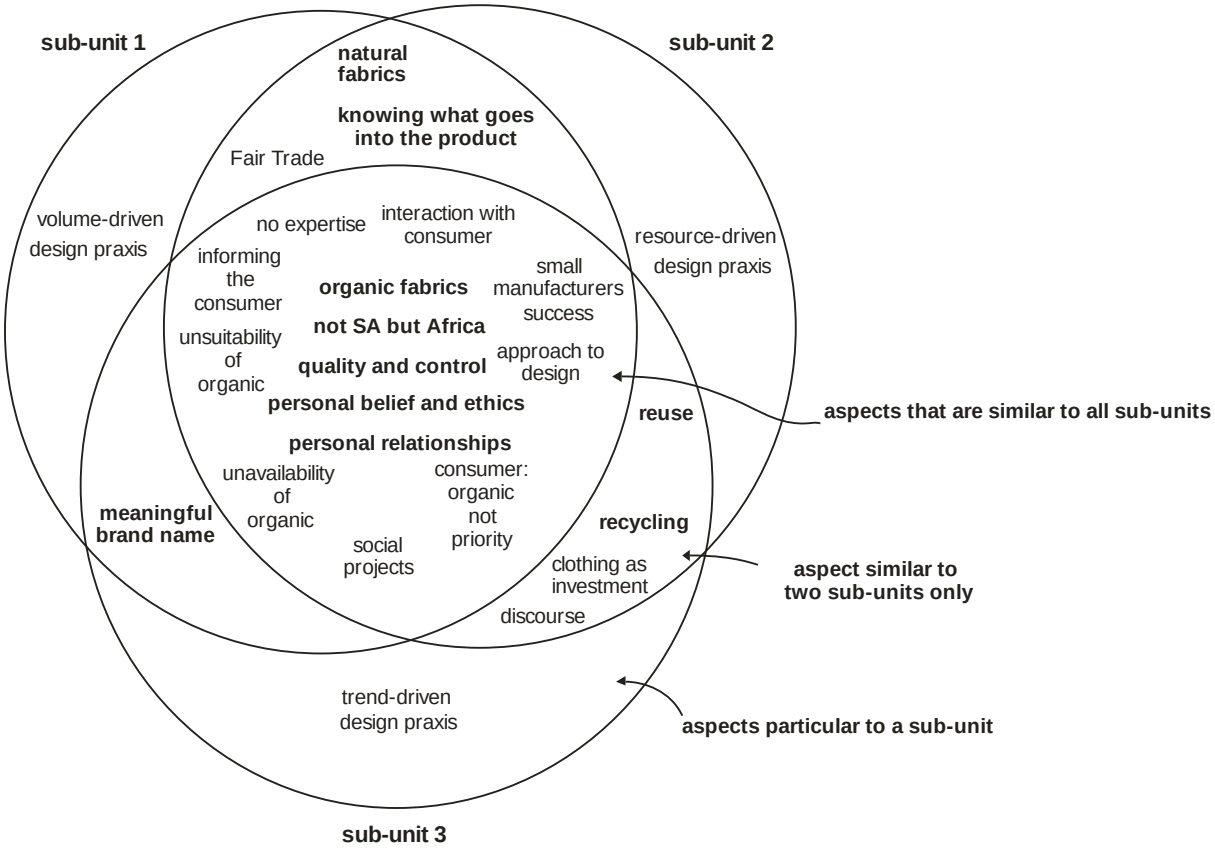


Figure 8.2: Schematic representation of similar and distinctive aspects (developed by author)

The bold writing in Figure 8.2 represents the similarities and uniqueness' noted in the vision, and the normal text presents the similarities and uniqueness noted in the strategy and the systems. The central overlapping area indicates similarities between all three sub-units. The secondary overlapping that is evident between the circles are similarities that occur between sub-units. The outer edges of the circles represent aspects that are distinct to a particular sub-unit. In Table 8.1, the aspects, as presented in Figure 8.2, are placed in the areas of discussion that informed the analysis (refer to Table 7.1), and which were developed from the conceptual framework, namely vision, strategy and systems.

Table 8.1: Result of the analysis

Sub-sub-headings used in Chapter 7		Areas of discussion in Chapter 7	Similar to all sub-units	Similar between some sub-units	Different between all sub-units
Vision of the sub-unit with regard environmental sustainability	**1**	**Environmental lens of business' vision**	Personal beliefs and ethics Personal relationships	Meaningful brand name	
	2	**Environmental sustainability differentiation point**	Organic fabrics Not SA but Africa Quality and control	Natural fabrics Re-use recycle	
	3	**View on environmental advantages**		Knowing what goes into the fabric	
Strategy for implementation	**1**	**The drivers for environmental sustainability**	Social projects	Fair trade	
	2	**The brand and environmental sustainability**			
	3	**The target market and creating awareness**	Informing the consumer Consumer: organic not priority		
	4	**Environmentally sustainable praxis**	Small manufacturer success Approach to design No expertise Unavailability of organic Unsuitability of organic	Clothing as investment discourse	Volume-driven design praxis Trend-driven design praxis Resource-driven design praxis
	5	**Environmental costs**			
	6	**Future strategies**			
Systems to assist and ensure implementation of environmental sustainability	**1**	**Establishing partnerships**	**Note:** As systems are derived from strategies, the information is conflated in strategy for implementation		
	2	**Systems in praxis**			
	3	**Systems in communication**			
	4	**Design-led systems for change**			

The information presented in Table 8.1 informs the discussion in this chapter. This table highlights several aspects. Firstly, it clearly shows which constructs are emphasized in the case study and which areas are emphasized by two sub-units, or only one sub-unit. Secondly, Table 8.1 highlights areas where gaps appear: for example environmental advantage is not perceived as important by all sub-units. Although the design praxis is presented as being different for all three sub-units, this is not necessarily considered a negative aspect, but

discussed for its unique approach to design praxis by each sub-unit. Up to this point in the research, the findings and summary of findings strictly followed the headings developed in the conceptual framework. However, Chapter 8 is organised according to the topics that emerged from the analysis, as presented in Table 8.1 and Figure 8.2, with the following headings:

Table 8.2: Headings used for discussion of findings in Chapter 8

FOCUS	HEADING	SUB-HEADING
Similarities of case	**Fundamental principles that underpin the praxis of environmental sustainability**	Suitable environmentally sustainable components
		Eco-aligned mind-set
		Social projects
	Approach to praxis	Product development
		Manufacture
	South African fashion consumer	
Areas of similarities in relevant sub-units of the case	**Knowledge**	
	Approach to product	
	Meaningfulness	
Areas that are unique to each sub-unit of the case	**Environmentally sustainable design praxis**	Volume-driven
		Resource-driven
		Trend-driven
	Opposing views on environmentally sustainable design	

The first area to be discussed is the similarity observed in the case.

8.1 AREAS OF SIMILARITY IN THE CASE

In this section, aspects that were found to be similar between the three sub-units are discussed by referring to the aspects as presented in Figure 8.2, in order to determine common traits that underpin environmental sustainability in the fashion industry. Similarities that emerged from the analysis can be grouped into three areas, namely the fundamental principle that forms the base of environmental sustainability in the sub-units, the approach to design and product development and manufacture performed by the sub-units, and how each sub-unit views the South African fashion consumer.

8.1.1 Fundamental principles that underpin the praxis of environmental sustainability

Fundamental principles that emerged from the analysis and that can be considered to underpin environmental sustainability in fashion design are divided into four areas. The first area considers suitable environmentally sustainable components and, in the second area, an eco-aligned mind-set is explored, which considers the similarities that emerged from the analysis as they are aligned to the economic strategy framework as presented by Esty and Winston

(2009). This is followed by the third area in which the social projects undertaken reflect the sub-unit's fundamental principles.

8.1.1.1 Suitable environmentally sustainable components

Actively seeking and being involved with the development of environmentally friendly fabrics was a key driver for Sub-unit 2 and 3. For Sub-unit 1, ensuring that the organic fabric that is used was certified organic by an international certification body was important. Rising costs, unsuitability of environmentally sustainable fabrics for trend-driven products, unavailability of environmentally sustainable fabrics, and a lack of expertise in the South African fashion industry with regard to environmental sustainability, were all mentioned as negative aspects that seemingly impede the use of environmentally sustainable fabrics. Participant 5 (2013:8) stated that pursuing the above-mentioned approach is challenging if the base, referring to environmentally sustainable fabrics, is not available.

8.1.1.2 An eco-aligned mind-set

In light of the above-mentioned difficulties that obstruct the application of an environmental approach, other aspects that drive the approach were identified; which is in line with Esty and Winton's (2009:282-283) suggestion that companies, deemed to be successfully operating from an environmentally sustainable approach, take a holistic vison and embed environmental stewardship into the core values of the business. The authors (Esty & Winston, 2009) list five aspects which inform the business's eco-mind-set.[107] In Table 8.3, adopting the 'there is no alternative (TINA)' approach was not evident in any of the sub-units.

Table 8.3: Comparing the sub-units – eco mind-set
(developed by author)

Eco-advantage mind-set	Sub-unit 1	Sub-unit 2	Sub-unit 3
Taking a broader view	x	x	x
Adopting a TINA approach	-	-	-
Considering stakeholders regarding the company's environmental performance	x	-	x
Basing environmental decision on core values for short- and long term benefits	x	x	x

However, personal core values and ethics underpin the environmental sustainability and ethical approach of all three the sub-units in a distinctive manner, and can be seen as aligning to a TINA approach. The obstacles hindering a fashion business that wishes to operate from an environmentally sustainable platform seems to be greater than not operating from an environmentally sustainable platform, and thus, being environmentally sustainable was not necessarily presented as an economic advantage. All three units proclaimed high costs as an inherent barrier to environmental sustainability. Thus, personal belief in ethics and an innate

[107] Esty and Winston (2009) refer to the WaveRiders – refer to Chapter 3, under section 3.1.2.

sense of eco-consciousness and eco-awareness by the founder members of each sub-unit are what underpinned each sub-unit's approach to environmental sustainability.

In Chapter 3, Esty and Winston's (2009) environmentally sustainable economic-strategy framework was discussed.[108] Although it was not the objective in this research to measure the sub-units against the framework suggested by Esty and Winston (2009), it is important to note where the sub-units aligned to the framework. The framework is useful as it provides an insight into the impact environmental sustainability has on economic feasibility. Esty and Winston (2009) argue that successful environmentally sustainable companies consider all four areas suggested in the framework. For *developing the up-side*, four areas are presented in Figure 8.3.

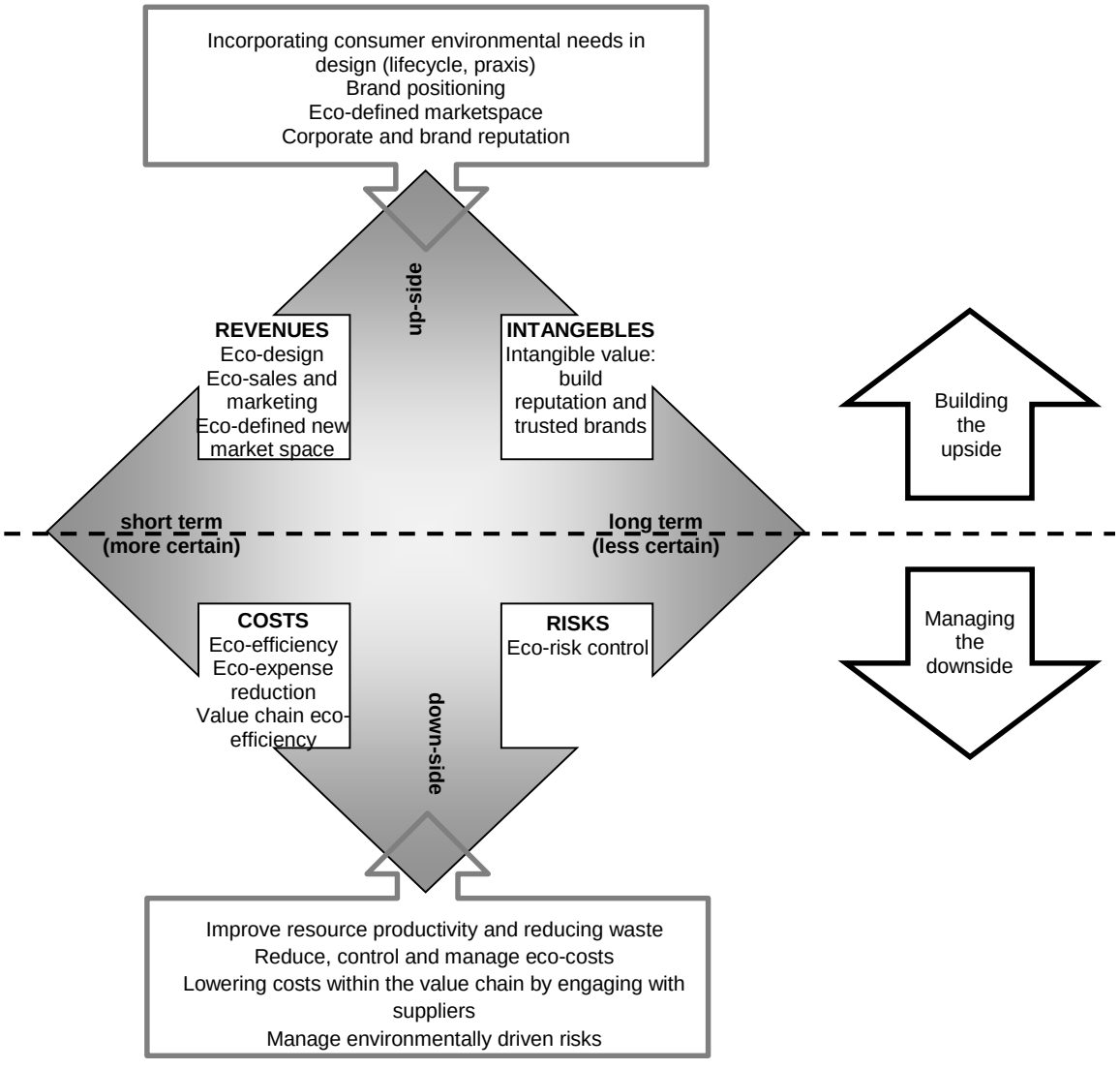


Figure 8.3: Aligned business strategy framework,
(based on Esty and Winston [2009:295])

[108] For Esty and Winston's (2009) environmentally sustainable economic-strategy framework refer to Chapter 3, under section 3.1.3.2.

The focus of the research was not on the consumer, but on design, therefore, how consumer environmental needs were met falls outside the scope of this study. All three sub-units mention that providing information to the consumer to make an informed buying choice is an integral part of their environmentally sustainable approach. Aspects of the product lifecycle are taken into consideration by Sub-unit 1 and 2 specifically, by considering practices such as Fair Trade, fabric dyeing techniques that have the least impact, reducing waste and reducing energy consumption. Sub-units 1 and 3 have a clearly defined eco-market space, whereas Sub-unit 1 and 2 develop their products around the constraints that environmental sustainability poses. All three sub-units emphasise corporate and brand reputation as important aspects in the sub-units' approach. Therefore all the aspects relating to *building the upside* overlap with the findings of the research.

Four areas for *managing the down-side* are listed in the Esty and Winston (2009) strategy framework. Two of the four areas in *managing the downside* in the framework overlap with the findings of the research. All three sub-units indicated that reducing resources is a driver in the sub-units' approach to environmental sustainability. Sub-unit 2 specifically refers to the abuse of resources for which the fashion industry is known, and expressed a need to take the above-mentioned aspects into consideration. Engaging with suppliers in the value chain was very evident in Sub-unit 1 and 2. Therefore, the *managing the downside*, as with *building the upside*, can be considered pivotal to the praxis of the case.

8.1.1.3 Social projects

In all three sub-units, their fundamental principles are extended to social intervention projects undertaken by each of the sub-units. For Sub-unit 1, two social projects, the Earthchild project and the Sixteenth Street Shop project, are mentioned in the data (B5). In addition to projects that were associated with the sub-unit, staff members of the sub-unit actively participate in social initiatives through the *iCAN* group. Additionally, free yoga classes offered by the sub-unit support a healthy working environment. For Sub-unit 2, the natural fabric waste and paper making initiative and the support for crafters was mentioned (Participant 5, 2013). For Sub-unit 3, waste fabric donation, collaborative projects with local crafters and support for charitable events were presented (B15). The above reflect the holistic approach of Ehrenfeld's (2008) Tao of sustainability, in which the three domains, namely the human, the natural and the ethical, are addressed simultaneously.[109] The findings therefore suggest that a broader holistic approach can be considered a fundamental principle for an environmentally sustainable approach to fashion design.

[109] For Ehrenfeld's (2008) Tao of sustainability, refer to Chapter 3, Figure 3.2.

8.1.2 Approach to praxis

Similar aspects with regard to praxis that emerged from the analysis of all three of the sub-units can be grouped into two areas, namely, an approach to design and product development, and an approach to manufacture.

8.1.2.1 Design and product development

Fundamental principles form the basis from which design can be developed. For Sub-unit 1, ethics forms the basis of the framework used for design. In Sub-unit 2, minimal impact on the environment forms the basis for design development, and in Sub-unit 3, the brand name and brand position signify environmental consciousness. Organic fabric is a component that all three sub-units ascribe to, in varying types of environmentally sustainable fabrics. For Sub-unit 1, a major focus is on organic cotton, while Sub-unit 3 only uses organic fabric when it seems suitable to the style of the product. Both Sub-unit 2 and Sub-unit 3 experiment with various types of organic fabric other than organic cotton. The most prominent fabrics considered by Sub-unit 2 are hemp and bamboo, whereas Sub-unit 3 seems to consider more unusual types of organic fabric, such as the indigenous South African 'boer' goat cashmere or the pile-treated imported mohair fabric. The type of product produced by Sub-unit 2 and Sub-unit 3 allows experimentation with different types of organic fabrics.

For both Sub-units 1 and 2, natural fabrics seem to be acceptable alternatives to organic fabric, whereas, for Sub-unit 3, fabric consideration is predominantly trend-driven. Due to this, Sub-unit 3 considers most organic fabrics unsuitable for the type of products it produces. Imported organic fabrics are more costly, which increases the cost of the product. All three sub-units agree that the unavailability of suitable organic fabric is the foremost negative aspect of environmental sustainability in South Africa. The above-mentioned aspect, and the knowledge and expertise of the Mauritian and Madagascan textile mills, is what prompted Sub-unit 1 to source and produce off-shore.

Finding suitable environmentally sustainable resources seem to be the one of the most critical aspects pivotal to the development of environmental sustainability in the fashion industry. The findings present two important points: firstly, the tenacity with which the sub-units explore suitable environmentally sustainable resources, and secondly, the lack of suitable environmentally sustainable resources available in South Africa. The second finding has the potential to impede future development in this area.

8.1.2.2 Manufacture

Due to the importation of fabrics and off-shore procurement and manufacture, products are produced in Africa and not just in South Africa. Sub-unit 2 is the only participant that produces only in the Gauteng region. Both Sub-unit 1 and Sub-unit 3 mention the loss of local

manufacturing expertise due to the closing of South African textile mills, as a key contributor to environmental unsustainability in South Africa with regard to clothing. All three units make use of CMT companies on the African continent to produce their product, with the exception of Sub-unit 2, which produces some of their products in-house. For Sub-unit 1 and 2, being the key client to the manufacturer, is a strategic approach that is underpinned by fundamental principles with regard to Fair Trade and ethics.

Knowing what the product is made of, how it is made and having a personal hands-on approach to supply and manufacturing are presented as important aspects. All three units suggest that communication with, close personal interaction with, and transparency in the supply chain, are all important aspects for effective manufacturing. According to Sub-unit 3, transparency contributes to ensuring that the sub-unit receives the product they want. Black (2010:253) mentions that, transparency in the development of environmental sustainability in the fashion industry has grown exponentially, and is essential for environmentally sustainable awareness for product development.[110] Thus, manufacturing in Africa and open and transparent relationships with the supply chain are important aspects that promote environmentally sustainable fashion design praxis.

8.1.3 The South African fashion consumer

In Chapter 3, Fisk's (2010) approach with regard to environmental sustainability and the consumer was discussed.[111] Fisk (2010) mentions that most consumers do not view environmental sustainability as essential, and that for most consumers it is a mere option. This is confirmed by all three sub-units, repeatedly. Participant 7 (2013:6) argued that the South African fashion consumer does not have foresight about the future in relation to environmental sustainability, and therefore should be educated in viewing environmental sustainability in fashion from a holistic platform. This is supported by Participant 2 (2013:12) by indicating that the South African fashion consumer is not interested in environmentally sustainability in relation to fashion.[112] Both these statements should be viewed as a discussion on each sub-unit's target market respectively, and cannot be considered a general description of the South African fashion consumer. However, the point that needs to be made concerns the importance of creating eco-awareness and eco-consciousness with regard to environmental sustainability in fashion is a critical.

[110] Black's (2010) approach to transparency for environmental sustainability in the fashion industry is discussed in Chapter 4, 4.3.2.
[111] For Fisk's (2010) approach, refer to Chapter 3, under section 3.2.1.3.
[112] Participant 2 specifically refers to the South African fashion consumer in relation to other, for example, the British fashion consumer.

Sub-unit 1 argues that the consumer, through being un-informed or un-interested, makes incorrect assumptions about organic fabrics, and confirms what Fisk (2010) describes as consumers not making the right choices due to being uninformed or ignorant regarding environmental sustainability. In Fisk's (2010) three-tiered model, only the top tier, *The World,* where emotive decisions are made that inspire, is where the consumer could relate to environmental sustainability and ethics. In Chapter 4 of this thesis, the argument of Joergans (2006) was presented, where he agrees that consumers seem interested in global concerns, but are seldom motivated to make related purchases due to the price of such products.[113] All three of the sub-units agree that consumers are more interested in quality of the product, and equate product value to product price. Thorpe (2010) argues that 'making the right choice by the consumer' should be factored into the product, and suggests 'design for behavioural choice', could be a design-led design approach. Design for behavioural choice considers additional information that would motivate a consumer's buying decision with regard to environmentally sustainable fashion.[114] Without an informed fashion consumer, environmentally sustainable fashion could not exist, therefore communicating with, and the educating of the consumer are important aspects to consider in developing eco-awareness and eco-consciousness amongst the South African fashion consumers.

In summary, the areas of similarity between all sub-units emerging from the findings, presented two important aspects. Firstly, the fundamental principles that underpin environmentally sustainable fashion design praxis that emerged from the findings are a broad holistic view to fashion design praxis, which is supported by suitable environmentally sustainable components and a transparent supply chain. All the aspects mentioned are critical in environmentally sustainable fashion design praxis. The second important aspect is communication and the education of the South African fashion consumer and is considered critical for advancing environmental sustainability in the fashion industry. The following section presents aspects that emerged from the findings that were similar in two sub-units.

8.2 AREAS OF SIMILARITY BETWEEN RELEVANT SUB-UNITS OF THE CASE

In this section, areas of similarity between certain sub-units are discussed by reviewing similarities between the three sub-units, in order to add to the common traits discussed in 8.1 that underpin environmental sustainability in the fashion industry. Areas of similarity that emerged from the analysis between Sub-unit 1 and 2 are followed by reviewing similarities

[113] Consumers' un-motivated approach to buying environmentally sustainable fashion products is discussed in Chapter 4, under section 4.3.2.

[114] Thorpe's (2010) argument is discussed in Chapter 3, under section 3.1.4.

between Sub-unit 2 and 3, and lastly, by reviewing similarities between Sub-unit 3 and 1. The areas of similarity are grouped into knowledge, approach to product and meaningfulness.

8.2.1 Knowledge

The aspect that emerged from the data that is similar between Sub-unit 1 and Sub-unit 2 concerns: knowing what goes into the product. In Sub-unit 1, knowing what goes into the product is an integrated imperative of their sourcing practices and supply chain management. The organic cotton certification process is a good example, where Sub-unit 1 stated that they fully embrace the certification process. This information was not communicated to the consumer. Aspects of organic-ness of the products are however, communicated by the trained retail staff to the consumer who enters the shop. Information on environmentally friendly products is presented on the sub-unit's website (Document 5, n.d.). Only one mention of certified organic cotton is made on the website of the children's-wear label (Document 6, n.d.). When considering educating the South African fashion consumer, knowledge of the organic-ness of a product forms part of educating the consumer.

Participant 6 (2013:2) mentions that Sub-unit 2 tried to determine the origin of the natural or organic fabric that was used in the products, but was not always able to do so, specifically when buying fabric through fabric agents. Both sub-units shared the need to work predominantly in natural fabrics. The experimental approach to and strong personal view of organic or natural fabric selection are important. Participant 5 (2013) commented to the sub-unit knowing what the fabric consisted of. Knowing what goes into the product was also needed from a manufacturing point of view. Sub-unit 1 had in place specific approaches to selecting manufacturers and specific controls for procurement, to ensure an acceptable quality product. Both Sub-unit 1 and 2 acknowledged that personal relationships with the manufacturers of their products aided their knowledge of how the products were made. Knowing what a fashion product is made of is of paramount importance in environmentally sustainable fashion design praxis.

The above in turn leads to a strategy that was mentioned by both sub-units with regard to fair labour practices. Fletcher and Grose (2012) suggest people friendly fibres and products as an approach to consider for environmentally sustainable fashion.[115] This approach considers the manufacturing environment and the labour force that is producing the products. Sub-unit 1 (2013) specifically selects smaller manufacturers that they consider apply acceptable labour

[115] Fletcher and Grose's (2012) suggestion with regard to fibres is discussed in Chapter 4, under section 4.2.

practices. A country such as Mauritius, which enforces strict, yet fair labour laws, aligns to Sub-unit 1's approach to fair labour practices.

Sub-unit 2 indicated that personally knowing the small owner-managed CMT enterprises that are used for the manufacturing of the sub-unit's products is an assurance towards knowing that fair labour practices are applied. The manufacturer selected by Sub-unit 1 in Madagascar, who engages in doing social good through feeding schemes in poor communities, is thus aligned to Sub-unit 1. Participant 1 (2013:16) referred to having a proud association with the particular manufacturer, thus inferring satisfaction in having found a manufacturer that aligns to the sub-unit's own ethical approach and social interventions in the sub-unit's community.

Therefore, knowing how a fashion product is made is of equal importance in environmentally sustainable fashion design praxis, as it relates to an ethical approach. Ehrenfeld (2008), in his 'Tao of sustainability', emphasises this by pointing to our sense of being (the human), our place in the world (the natural), by our doing the right thing (the ethical).[116] Ethics thus forms a critical part of a broad holistic viewpoint for environmentally sustainable praxis.

8.2.2 Approach to product

Similar aspects that Sub-unit 2 and 3 share are a focus on minimising waste and recycling waste fabrics. For Sub-unit 2 organic and natural waste fabric pieces are donated to two organisations that re-purpose the waste for other products, one of which is the paper made from waste fabric that is bought back from the organisation and sold in the sub-unit's retail outlet. Sub-unit 3 donates some of its waste fabric and re-purposes others as accessories which are sold on-line.[117] Both sub-units referred to clothing as an investment, and promote this notion when interviewed in popular media. Sub-unit 2's repair-of-products aids longevity of products and thus aligns to viewing clothing as investment. Sub-unit 3 specifically focusses on clothing as a reflection of one's 'eco-consciousness' and professes to be committed to sustainability and eco-sensibility (Document 18, n.d., Document 24, 2012). The owner/designer of Sub-unit 3's public profile promotes the discourse on environmental sustainability and ethical approach to fashion from a consumer point of view.

[116] Ehrenfeld's (2008) Tao of sustainability is discussed in Chapter 3, under section 3.1.3.1.
[117] An example of the re-purposed waste fabrics is presented in Chapter 7, Figure 7.17.

8.2.3 Meaningfulness

The only similar aspect emerging from the data between Sub-unit 3 and 1 is the need for meaning and value of the brand name. The two labels that Sub-unit 1 produces both have specific meaning attached to the words that the brand names consist of. The focus on having meaning is carried through into the framework for design and underpins the design process for both labels. In addition, the decision to allow the brand name to be used for a social intervention in Cape Town's marginalised areas adds gravitas to the brand name and its associated meaning (Participant 1, 2013; Participant 2, 2013; Document 23, n.d.). A similar approach to brand name arises in Sub-unit 3, where the brand name alludes to a specific place that has specific meaning in South Africa, which is used as an inspiration for building the brand and thus underpins its development. This aligns to the notion of – 'clothing with a conscience' (Participant 7, 2013; Document 18, n.d.). Although Sub-unit 2 has a very distinct name, the brand name does not emerge from the data as a focal point for brand development.

8.3 AREAS THAT ARE DISTINCTIVE TO EACH SUB-UNIT IN THE CASE

In this section, areas that emerged from the analysis that were not similar are discussed by reviewing where sub-units differ, in order to understand the uniqueness of each aspect and to establish what could support the development of environmental sustainability in the fashion industry. As discussed in Chapter 3, Wahl and Baxter (2008) argue that environmental sustainability is the world's most crucial design problem. According to them, it is these specific real world problems that require integrated and flexible design solutions.[118] In Chapter 4, I argued that the designer is a key role player in developing integrated solutions in environmentally sustainable design development, as suggested by Wahl and Baxter (2008).[119] The most significant area of differentiation between the three sub-units that emerged from the analysis is the approach to design praxis by each sub-unit. This differentiation also alludes not only to each sub-unit's unique approach to implementing environmental sustainability, but also to how distinctive in approach design praxis can be, as discussed in Chapter 5 regarding the level of expertise of the designer and the complexity of the design problem.[120]

The type of fabric and any indication of environmental sustainability were noted in the garment products that were reviewed across the three sub-units. As is presented in Table 6.7, the products reviewed were categorised to determine the type of fabric used.[121] This categorisation was used to calculate the number of a specific type of fabric used in the garment products. In

[118] The crucial design problem presented by Wahl and Baxter is discussed in Chapter 3, under section 3.2.1.1.
[119] Integrated solutions as suggested by Wahl and Baxter (2008) are discussed in Chapter 3, under section 3.2.1.
[120] Refer to Chapter 5, sections 5.1.2 and 5.2.2.
[121] For Table 6.7 refer to Chapter 6, Section 6.4 - 6.4.1.4.

order to ensure consistency in reflecting on the type of fabric used in each sub-unit, the range of fabrics presented in the garment product tables (such as seen in Table 6.7), is used in each of the following descriptions presented in 8.3.1, 8.3.2 and 8.3.3.[122]

The graph in Figure 8.4 shows that, in the garment products reviewed, Sub-unit 1 aligns to their approach of using natural or organic fabrics for their product. In the graph, the category labelled as 'undisclosed' indicates that, in some of the garment products reviewed, the type of fabric could not be determined. In this category, Sub-unit 2 had the highest percentage of garment products in which the type of fabric used was not indicated, as presented in Figure 8.4.

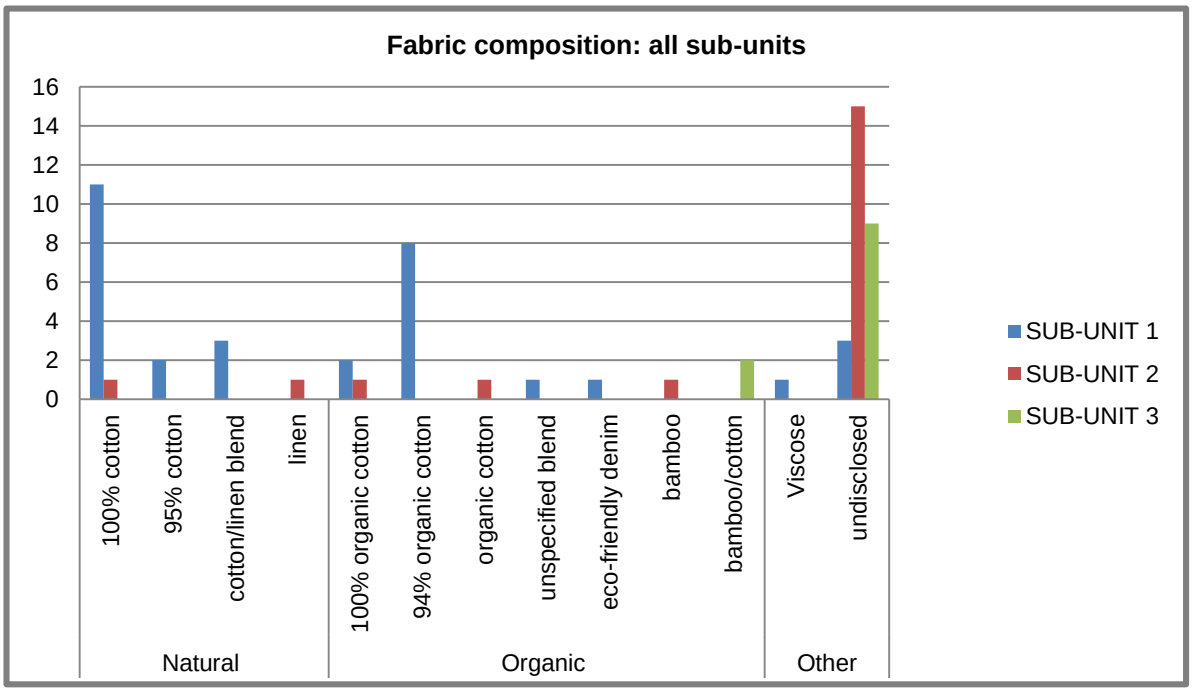


Figure 8.4: Fabric composition of garment products[123]

Sub-unit 3 regularly participates in fashion week showcases and thus SAFW (Product, 28, n.d.; Product 29, n.d.) has a large collection of Sub-unit 3's work archived on the SAFW website. The collections archived are all photographs taken during a fashion show and no accompanying text informs the reader of the possible fabric composition of the garment. Thus, for the purposes of determining the data for Figure 8.4, only eleven garment products found on the sub-unit's website, were considered. The above information on fabric contributes to the

[122] It is for this reason that, in some of the pie charts, certain fabrics are reflected in light grey writing. These fabrics are represented with a zero percentage.

[123] It should be remembered that fabric can only be considered organic if it has been produced according to specific standards, for example, using the GOTS or Oekotex international standards (Document 1, 2014; Document 2, 2014). An example of this is organic cotton. 'Natural fabric' refers to fabric made from natural components as opposed to man-made components, for example, cotton. A discussion on the various types of fabrics that can be considered environmentally friendly can be reviewed in Chapter 4, under section 4.1.

discussion in the subsequent sections where the respective approaches to design of each sub-unit are presented and discussed separately.

The terms trend-driven, resource-driven and volume-driven emerged from the research, and are used to differentiate each sub-unit. The term volume-driven, associated with Sub-unit 1, refers to the approach taken by the sub-unit. Participant 1 refers to an amount of a million garments produced in the year of the interview (2013:11), which is corroborated by Participant 2 (2013:15). Sub-unit 2 is associated with resource-driven, as stated by Participant 5 (2013:5,7) and Participant 6 (2013:2), and in this regard, resources refer to fabric. The sub-unit firstly concentrates on finding the right organic fabric before considering alternatives. Sub-unit 3 is trend-driven, as mentioned by Participant 7 repeatedly (2013). The focus of the sub-unit is to produce garment products that are in line with current trends. For this sub-unit, organic, or environmentally sustainable fabrics, are not a primary concern (2013:3).

The purpose of this research study was not to explore and discuss the process of design, but to reflect on design-driven environmentally sustainable practices in the fashion industry of South Africa. As the most significant area of differentiation between the three sub-units that emerged from the analysis was the approach to design praxis by each sub-unit, this section therefore explores the design praxis of each sub-unit. The sub-section concludes with opposing views of design that should be noted.

8.3.1 Volume-driven design praxis

A summary of the products selected for this research study revealed that the types of products, as presented in Figure 8.5, produced by Sub-unit 1 in the children's-wear label, were made from natural fabrics, predominantly 100 percent cotton, as reflected in Figure 8.5.[124]

[124] As reflected in Table 6.5(a), 30 garment products were viewed and 16 selected.

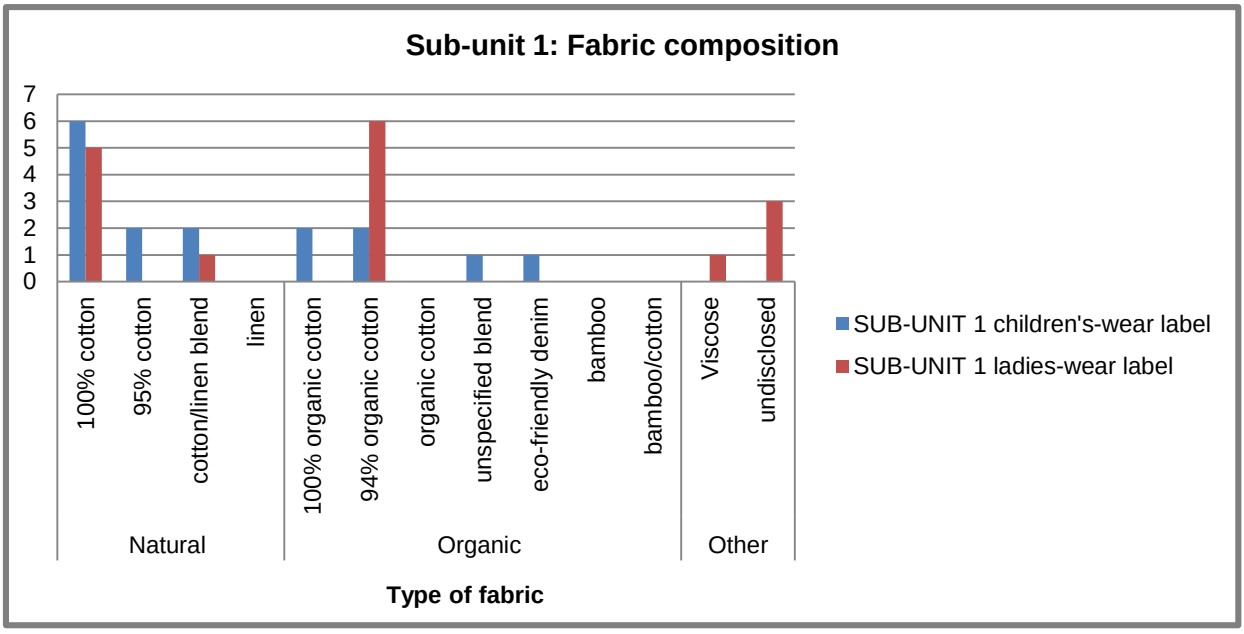


Figure 8.5: Fabric composition of both labels produced by Sub-unit 1

More organic cotton was used for the ladies-wear label, which confirms the discussion by Participant 1 (2013) with regard to use of organic cotton and keeping a competitive edge.[125] If one considers Sub-unit 1 as a whole, the use of 100% cotton and 94% organic cotton were the preferred fabrics that were used, as presented in Figure 8.6.[126]

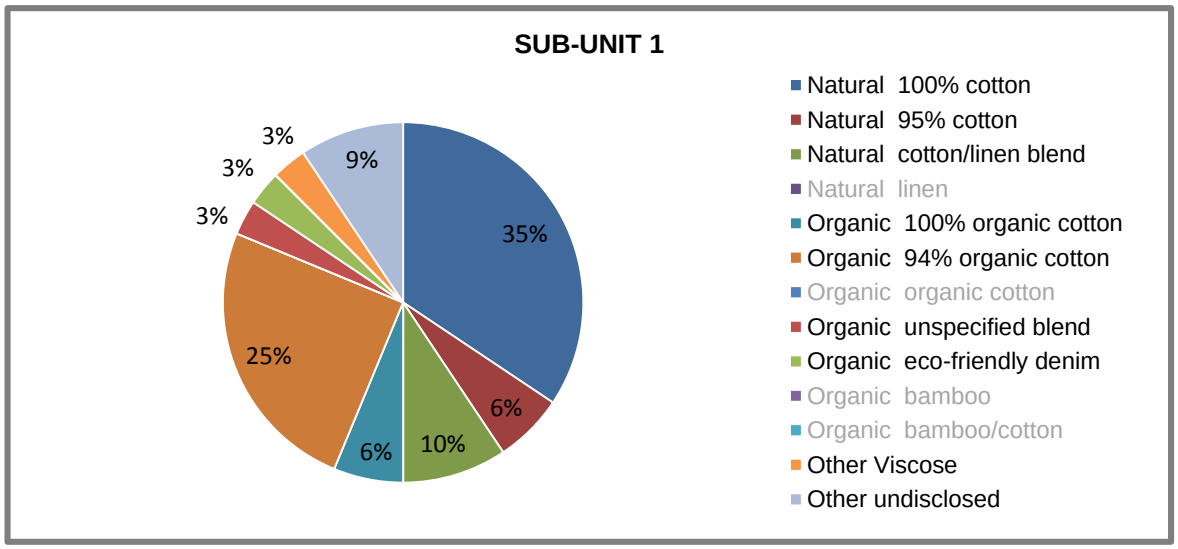


Figure 8.6: Representation of fabric composition of product sample for Sub-unit 1

The design praxis for this sub-unit is driven by ensuring the required volume product at the expected quality standard to supply the forty-nine retail outlets that the sub-unit has spread across South Africa. The products were designed in their local studios but were produced elsewhere, which included procurement and manufacture of the products. The above required

[125] Refer to Chapter 7, under section 7.2.1.2.
[126] The percentages presented here is information on fabric presented by the sub-unit on their website.

an approach to design that considered local design and international production. For this approach, Greenberg Ellinwood's (2011) linear design process, as described in Chapter 5, allows the design process to develop in a controlled step-by-step process.[127] The nine steps that Greenberg Ellinwood's (2011) design process consists of are presented in Figure 8.7.

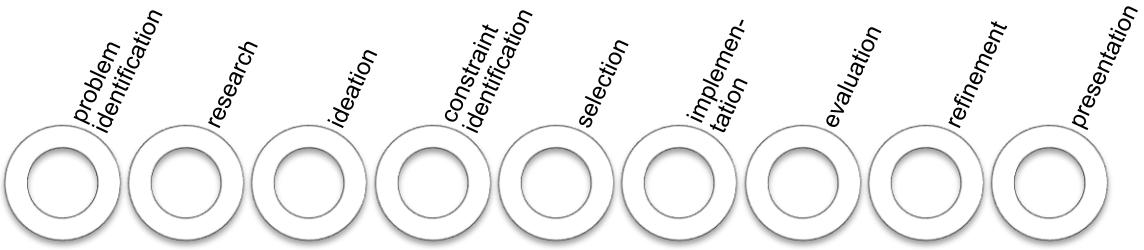


Figure 8.7: Linear fashion design process,
(based on Greenberg Ellinwood [2011])

In the above presentation, a designed product or collection is the result. In Sub-unit 1 in particular, once the design process was complete, fabric was sourced for the collection which, as Participant 3 (2013:3) suggested, created the potential to develop fabric for a collection. In the Greenberg Ellinwood design process model, continuity of a designed collection and the ability to produce high volumes of any particular product are enhanced. Participant 1 (2013) often referred to the design team having a framework (the fundamental principles which were presented in 8.1.1) which aligns to the linearity of the Greenberg Ellinwood design process model and the control it offers. Participant 3 (2013:3) specifically had difficulty aligning to the above-mentioned approach and admitted that her background and previous experience of design was the opposite of what was required in a volume off-shore production approach. Her comments were based on her personal values, as these were not mentioned by the other designer, Participant 4, of Sub-unit 1 who was interviewed. Varying approach to praxis aligns to the Dorst's (2008) levels of design expertise and the layers of practice.[128]

Due to the operational aspects, and the volume of product that needed to be generated, a linear, fairly inflexible, process of design was most likely followed. The above-mentioned is specifically the case when the design and production are located apart from each other. CMT manufacturers all have various clients, and thus time for production is planned and executed according to fairly strict deadlines. Participant 2 (2013:7) referred to being the key client as opposed to being one of the smaller clients in the queue, but did not mention being the only

[127] Greenberg Ellinwood's (2011) fashion design process is discussed in Chapter 5, under section 5.2.1.
[128] Chapter 5 explores Dorst's level of expertise, the layers of practice and the type of design activity in which complex problems, such as environmentally sustainable design praxis, need to be solved.

client. Designers in Sub-unit 1 did not have personal relationships with the customer base and client target market profiles and sales reports were the only indicators that informed the design process. Participant 1 (2013:17) specifically mentioned that the customer base for the ladies-wear label did not like sudden change. This was confirmed by Participant 3 (2013:3) who mentioned that the styles for the ladies-wear label, seem classic.[129] The children's-wear label was in a fiercely competitive market and thus styles were informed by sales reports and market indicators. Therefore, in a volume-driven design praxis, the need to understand the target market is crucial; it specifically requires that designers understand their role in the development of environmentally sustainable fashion products. In a volume, linear process, it is imperative that design does not become a highly specialised function that detracts from the complexity of the design problem. Fashion designers specifically should engage with all aspects of product development, as providers of specialist knowledge, in order for design practice to have a positive impact.[130]

8.3.2 Resource-driven design praxis

The fabric composition, derived from the products reviewed, provided a different scenario for Sub-unit 2. Figure 8.8 presents a representation of types of fabrics used for the products produced by Sub-unit 2.

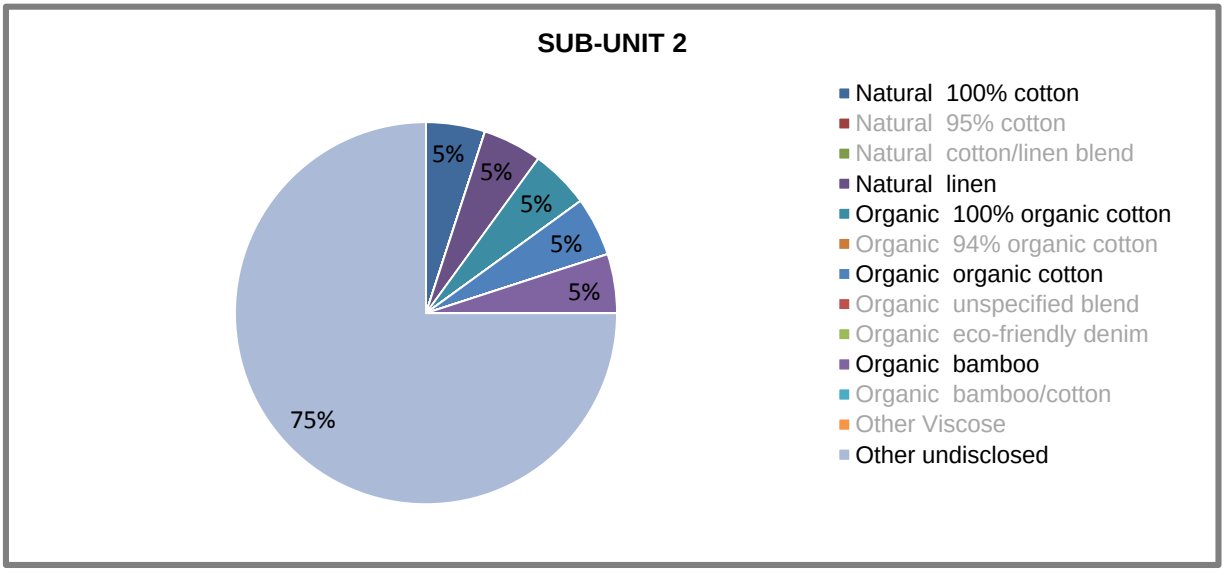


Figure 8.8: Representation of fabric composition of product sample for Sub-unit 2

[129] Waddell (2004:189) describes classic styles as garment styles that do not go out of date and that are usually characterised by simple lines.
[130] Refer to Chapter 5, under section 5.2.2.

In the above graph, the fabric used for three-quarters of the products reviewed was not disclosed. The remaining products reflected the use of natural and organic fabrics, as mentioned by Participant 5 (2013) in the interview.

An experimental design process in Sub-unit 2 was presented by both participants (Participant 5, 2013; Participant 6, 2013). Participant 6 (2013:3-4) described the process of developing a new collection as starting with the fabric.

> Everything starts with fabric for us; because I [have] go[t] to keep in mind that I just can't put a collection together that I can never produce. I've always got to think about the production at the end of the day, and that's my really big job is the production planning, and getting everything actually made and sent out. So, when we start with a collection, a show, I'll start with a theme . . . and a colour palette… .

The above was interesting, as it alludes to the experimental approach that emerged from the findings. It also suggests a different approach to the design process as described for Sub-unit 1. In the part of the interview where Participant 6 (2013:3-4) explained the design process, she referred several times to starting with the fabric, which aligned to the sub-unit's fabric-driven design process. If one compares this approach to the Greenberg Ellinwood (2011) design process, some of the steps in the process might not be completed. The design process, as described by Participant 6 (2013), seemed to be an iterative process, described by Lawson (Lawson, cited in Smal [2014:4]), as moving forwards and backwards at the same time, and thus the Greenberg Ellinwood (2011) design process model presented in Figure 8.7, becomes difficult to apply. Designer Participant 3 (2013) was one of the founder members of Sub-unit 2, and thus her personal approach to design mirrors that which Participant 6 described in her interview.

As reported in Chapter 7, Participant 6 (2013:3) referred to reducing waste during patternmaking as one of the approaches to environmental sustainability. This mirrors what Fletcher and Grose (2012) refer to as zero-waste, an approach to reducing waste as part of design and product development. This is considered an example of the Slow-Fashion movement. In Chapter 4, Figure 4.7 presents a no-waste pattern construction technique.[131] Participant 6 (2013:3) mentioned that patterns, where almost no waste was evident, have been developed. Reworking and repairing existing garment products is also considered as an approach in the Slow-Fashion movement, both of which are undertaken by Sub-unit 2, by re-working some of the wedding dresses and offering a repair service of old garment products to the customer (Participant 5, 2013:6; Participant 6, 2013:8). To some extent the sub-unit also

[131] Refer to Chapter 4, Figure 4.7.

focussed on regional resources as part of their manufacturing strategy – another Slow-Fashion approach.[132]

Sub-unit 2's types of products, and volumes of each product, present an interesting scenario. For wedding dresses, an acute personal experience between designer and client needs to exist. Participant 6 (2013:5) mentions the design room being adjacent to the retail venue, providing opportunity to interact with clients on a daily basis. This closer, or more intense, personal relationship allows the designer greater insight into the type of client the sub-unit provides for. The sub-unit indicated that it makes use of local CMT manufacturers when higher volumes of products are required.[133] Closer proximity of client, design room and manufacturer allows the design process to be more flexible and offers an iterative approach to fashion design practice.

8.3.3 Trend-driven design praxis

The fabrics used by Sub-unit 3 consisted of only two categories, namely, cotton bamboo blend and undisclosed fabrics used as presented in Figure 8.9.

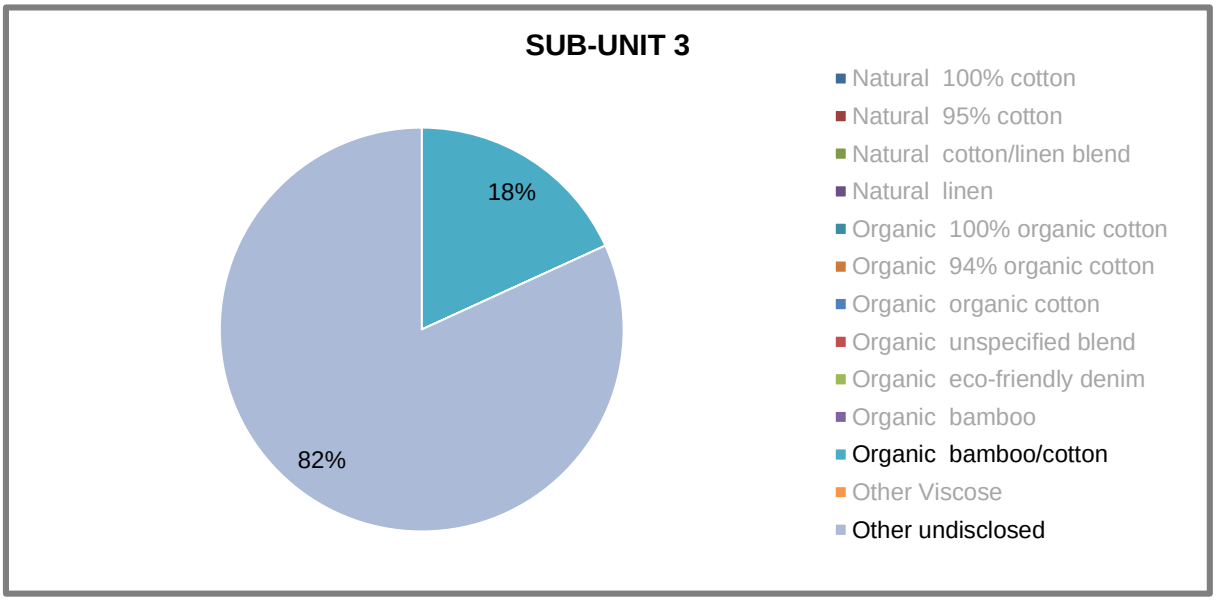


Figure 8.9: Representation of fabric composition of product sample for Sub-unit 3

Most of the products reviewed for Sub-unit 3 were from the SA Fashion week (Document 28, n.d.) website and this did not provide a description of the fabrics used for the product. Some

[132] Sub-unit 2 makes use of regional (in the Gauteng area) CMT manufacturers (refer to Chapter 7, under section 7.2.2).

[133] Exact quantities were not asked for during any of the interviews and questions that could reveal market strategy or competitive edge were not considered. Only Sub-unit 1 made one comment with regard to amount of products produced (Participant 1, 2013:17)

of the images, like the garment presented in Figure 7.17,[134] are similar to the products viewed during the interview. One can thus deduce that the sub-unit is using environmentally sustainable fabrics even though Figure 8.9 somewhat contradicts this. With the products reviewed on the website, a description of fabric is given and this confirms that environmentally sustainable fabrics were used. However, during the interview, Participant 7 (2013) repeatedly mentioned that environmentally sustainable fabrics are often not suitable for high-fashion styles. The unsuitability of environmentally sustainable fabrics is a dilemma for environmentally sustainable fashion design praxis, and could impede its development for the South African fashion industry.

Design for Sub-unit 3 is trend-driven, which requires that the products are regarded as high fashion. Constant consideration of styles, types of fabrics and new and 'edgy' ideas are a requirement for trend-driven fashion, as discussed in Chapter 7. It could not be determined what interaction, if any, Sub-unit 3 has with its client base. However, from the documents reviewed and the interaction with a broader audience that emerged from the interview data, and the public profile of the owner/designer, the customer base in all probability consists of clients who prefer designer wear. Participant 7 (2013:6) specifically mentioned that he does not think customers purchase his products because of the sub-unit's approach to environmental sustainability. This alludes to an un-aware, un-interested or un-informed fashion consumer.

The public awareness and eco-consciousness promoted by the owner/designer of Sub-unit 3, aligns to what Fletcher and Grose (2012) suggest as a new role of the fashion designer. The authors propose that communicating and educating the consumer is an important aspect for the environmentally sustainable designer.[135] Even though the products of the sub-unit cannot always be considered environmental sustainability, that Participant 7 willingly admits that the products are not always environmentally sustainable, alludes to providing information. The public address through interviews and articles assists in communicating with, and educating the consumer. Fletcher and Grose (2012) argue that the fashion designer should build literacy regarding environmental sustainability through story-telling, an aspect reiterated by Participant 7 (2013:5):

> But I think what's really important, what's amazing is the manner in which the internet is becoming a very powerful tool to tell stories…each garment has a story which enables you to spread your message, which isn't necessarily going to be that powerful when someone picks up something in a store. Because they are going to look at it and try it [on], they are not going to read all this information.

[134] Refer to Chapter 7, Figure 7.17.

[135] The roles Fletcher and Grose (2012) refer to are discussed in Chapter 5, under section 5.2.2.

Fletcher and Grose (2012:158) suggest that fashion designers who are communicators and educators can trigger new behaviour. The telling of stories that Particpant 7 refers to, aligns with developing an emotive response to fashion design praxis, which is supported in the suggested new paradigm of Armstrong and LeHew (2011).[136] However, empathy in design is driven by human input and therefore should be considered a fundamental principle for environmentally sustainable fashion design, thereby triggering new behaviour.

8.3.4 Opposing views on environmentally sustainable fashion design

The designers interviewed had differing and contradictory opinions on what environmentally sustainable design is. In this sub-section their personal opinions are presented, which is followed by a discussion on the opinions.

8.3.4.1 Opinions of the fashion designers interviewed

The opinions are summarised in Table 8.4.

Table 8.4: Summary of designer opinions on environmentally sustainable fashion design praxis (developed by author)

Participant 3	Participant 4	Participant 6	Participant 7
Eco-fashion doesn't exist	100% eco not possible	Eco – an absolute necessity	Apply eco where possible
Only possible in a high-end safari market	Products are either more, or less, eco	Organic or natural only	Broader holistic view
Only eco if 100 % organic		Off-shore production not eco	Fostering eco-awareness
Not the role of the fashion designer			Promoting aligned lifestyle

Participant 3 had the most contradictory opinion about environmental sustainability in the South African fashion industry today. Even though she considers herself, and is regarded as, an eco-designer, she referred to a disjuncture between fashion and clothing with regard to environmental sustainability. According to Participant 3 (2013:11), clothing is a comfortable, good quality garment, something that is worn and makes one feel good. Thus, she associates trends with fashion and clothing as being timeless classic styles. She (Participant 3, 2013:11) argued that fashion and eco do not belong together and did not consider the above to be fashion, and thus suggested that clothing can be eco, yet fashion cannot be considered eco. Participant 3 proposed that the role of the designer was not to consider all aspects of environmental sustainability, yet mentioned that her own personal design values as fashion designer were to base design on an environmentally sustainable approach. According to her,

[136] Emotive design is discussed in Chapter 5, under section 5.1.2, and the suggested paradigm in section 5.2.3.

eco-fashion could only exist in a high-priced product category and suggested the 'safari industry' as a good eco-opportunity.[137] Participant 3 preferred the design process to start with, and be inspired by, the fabric that is intended for the product. She alluded to the fact that one can only be considered an eco-designer if one applies 100 percent organic components to the products. Comments made by Participant 3 aligned to the fabric-driven approach and longevity of product ethos applied in Sub-unit 2, her previous place of employment.

Participant 4 (2013:3) commented that there were no 100 percent environmentally sustainable fashion products available, only products that were more or less environmentally sustainable. Participant 6 (2013:6-7) considered environmentally sustainable fashion a necessity and suggested that the consumer needs to develop an eco-awareness with regard to clothing. Both participants of Sub-unit 2 continually mentioned the declining availability of organic fabrics, and this influenced Participant 6's view on considering scarcity of fabric as in pre-World War Two times (Participant 6, 2013:7). Participant 6 (2013:7) refers to one of the leading retailers as promoting environmental sustainability, yet still having their product manufactured in an Asian country. Participants of Sub-units 1 and 2 considered only organic fabrics as being environmentally sustainable. Only the designer/owner of Sub-unit 3 alluded to a broader concept of environmentally sustainable fashion design, by using a fabric such as the indigenous South African boer goat cashmere, which has a stronger embedded social element – that of developing marginalised communities.

8.3.4.2 Reflecting on the designer's opinions

Two aspects are presented for discussion, namely, a possible gap in knowledge, and alignment to the three suggested categories by Fletcher and Grose (2012:180-181).

Chapter 1 alluded to Palomo-Lovinski and Hahn's (2014) article that suggested that an aspect of the fashion industry's inability to address environmentally sustainable issues was partly due to the fashion designer's inability to do so. Their article is based on the American fashion industry. In this research, a lack of knowledge on environmental sustainability did not pertinently emerge. However, the varying opinions on how environmental sustainability could be applied, does allude to a knowledge-gap in implementation of environmental sustainability. This research case study consisted of only three sub-units and thus cannot be considered representative of the South African fashion industry, but a snapshot of current practice. Another aspect to be noted relates to an adaptability of thinking by the designer. Although the designers seem very knowledgeable about the approach of the sub-unit they represent, some comments made by the various designers are a cause for concern. The comments made by

[137] Participant 3 (2013) only considers the safari market because of the high cost of eco-clothing products.

the designers suggest that a broader, more encompassing approach to, and understanding of, environmental sustainability is needed by fashion designers.[138]

Fletcher and Grose (2012:180-181) propose three categories of possible opportunities for engagement in environmentally sustainable fashion design. The first of these is an aligned approach to design with a focus on the impact the design has on the environment, requiring that designers approach design practice as a driver of change through re-thinking the use of components, considering alternate sourcing and developing materials, thus suggesting that design be used as a strategic tool. The second category is a new view on business. Fletcher and Grose (2012) acknowledge that commerce remains a driver, but argue that designers need to consider regional conditions and services that include social, cultural and environmental value. The third category is knowledge. The authors (Fletcher & Grose, 2012) argue that designers need to become knowledgeable about the technical aspects of the discipline. A summary of the above categories and how the approach of the designers in the three sub-units aligns to the three suggested categories proposed by Fletcher and Grose (2012) is presented in Table 8.5. The left hand column presents the headings as discussed in this chapter and thereby provides an overview of alignment to the proposed categories.

Table 8.5: Three categories of opportunity for environmental sustainability in fashion design praxis (developed by author)

Categories that emerged from the findings (headings)	**SUGGESTED CATEGORY AND APPROACH**	**ALIGNMENT**	**Sub-unit 1**	**Sub-unit 2**	**Sub-unit 3**	**IMPEDES ALIGNMENT**	**Sub-unit 1**	**Sub-unit 2**	**Sub-unit 3**
Approach to fashion design praxis	**Approach to design**	Considering impact	x	x	x				
		Considering alternates		x	x				
Fundamental principles that underpin praxis	**Approach to business**	Focus on local	x	x	x	Resources	x	x	x
		Aligned value	x	x	x	Practice		x	x
Approach to product	**Knowledge**	Technical knowledge		x					
Fundamental principles		Holistic thinking	x	x		Adaptability of thinking	x	x	
Approach to fashion design praxis									

[138] The imminent acquisition of Sub-unit 1 by another leading retailer in South Africa, and whether their current environmentally sustainable approach will remain, poses an interesting dilemma.

The above table considers the approach of the designers interviewed. Although all three of the sub-units align to the suggested approaches in one way or another, it must be noted that all three sub-units, due to current conditions in the South African fashion industry, experience difficulties with regard to the lack of suitable environmentally sustainable resources. Without suitable environmentally sustainable resources, as suggested in the case, implementation of environmentally sustainability is not possible.

8.4 ALIGNING THE PARADIGM

In this sub-section, the Armstrong and LeHew (2011) paradigm discussed in Chapter 5 is aligned to the three sub-units, in order to determine where, on the suggested Armstrong and LeHew (2011) paradigm, each sub-unit lies.

8.4.1 The Armstrong and LeHew paradigm

The paradigm consists of four levels, which are presented in Figure 8.10.

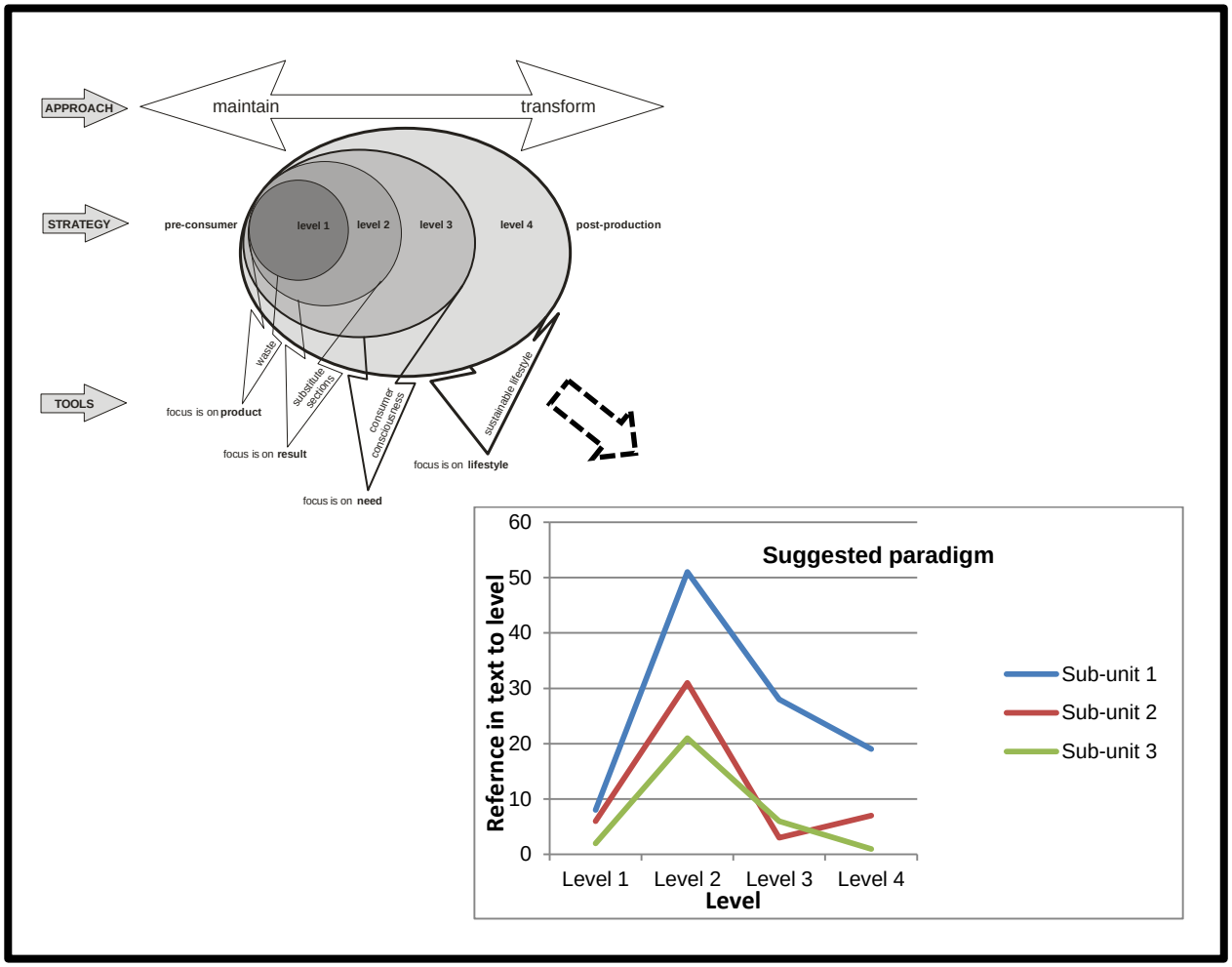


Figure 8.10: The suggested paradigm and how it translates in the case study[139] (developed by author)

The paradigm considers the two strategies, namely, those that aim to maintain environmentally sustainable practices and those that lead to transformation. The latter (transformation) necessitates that environmental sustainability is approached from a holistic view. The four levels of the paradigm are driven by specific strategies. In level one the strategy is aimed at waste and thus the focus is on product. The strategy in level two focusses on processes and is aimed at substituting components. Level three includes consumer consciousness and thus is focussed on need, and level four targets sustainable lifestyles. Level four particularly encourages environmental well-being and requires that design becomes a driver of change.[140] The preceding levels all contribute to the next level and thus, for example, level four cannot exist without being based on levels one and two.[141]

[139] This paradigm is thoroughly discussed in Chapter 5, under section 5.2.3.
[140] Refer to Chapter 5, under section 5.3.
[141] The new suggested paradigm by Armstrong and LeHew (2011) was further explored in two research outputs. The first was a publication of the *Design Principles and Practices* conference series (Smal, 2012), and the other in the 2014 Cumulus Johannesburg conference proceedings (Smal, 2014).

The focus with regard to the four identified levels of the suggested paradigm is discussed in Chapter 7. In Sub-unit 1 the emphasis lies on level three specifically because of the sub-unit's social and ethical approach – an approach driven by the people within the sub-unit. In Sub-unit 2, level two is dominant due to the sub-unit's four-step strategy with regard to selecting of fabric, reducing waste, reusing and repairing products and recycling of waste fabric. Sub-unit 3 focusses on level two due to their recycling and manufacturing practices. An overview of the three sub-units reveals the following scenario, as presented in Figure 8.11.

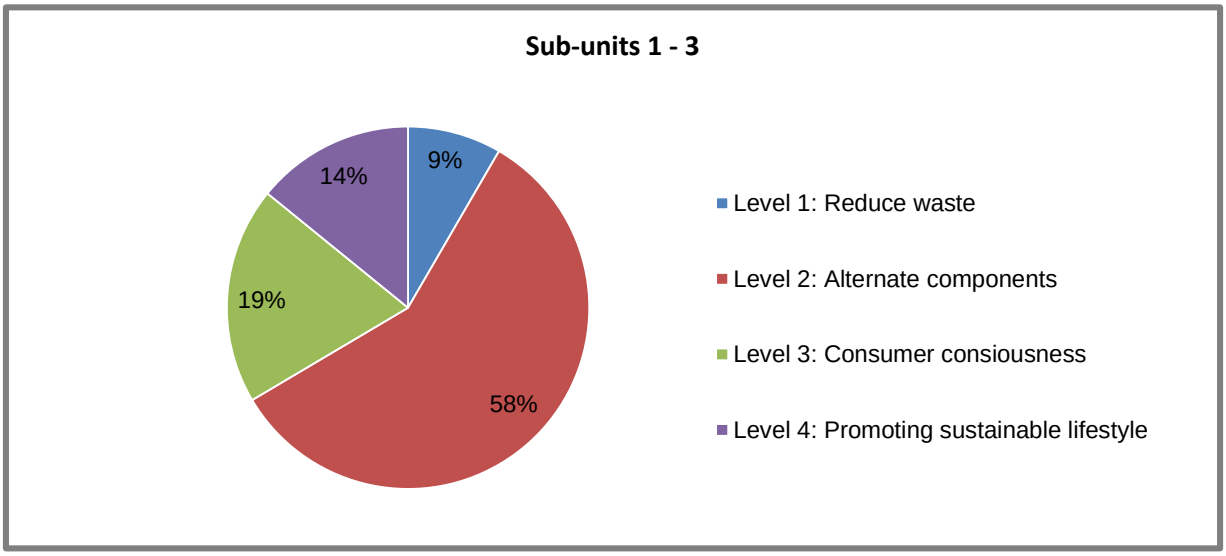


Figure 8.11: All sub-units, levels 1-4

The above chart indicates, when viewing all three of the sub-units, that level 2 occurred most often in data and thus a focus on results in products seems to be the dominant level.

8.4.2 An emerging level in the paradigm

A new suggested framework is explored, by reviewing the missing level in the Armstrong and LeHew's suggested paradigm in order to expand it to include a broader encompassing approach. During refinement of the data, a new level to my interpretation of the suggested Armstrong and LeHew (2011) paradigm emerged. In all three of the sub-units a strong social and ethical responsibility became apparent, and thus words within all the interview raw data that resonated with notions of social and ethical responsibility by the sub-units, or by individual members within the sub-units, were considered. This data informed the emerging additional level, level 5, as reflected in Figure 8.12.

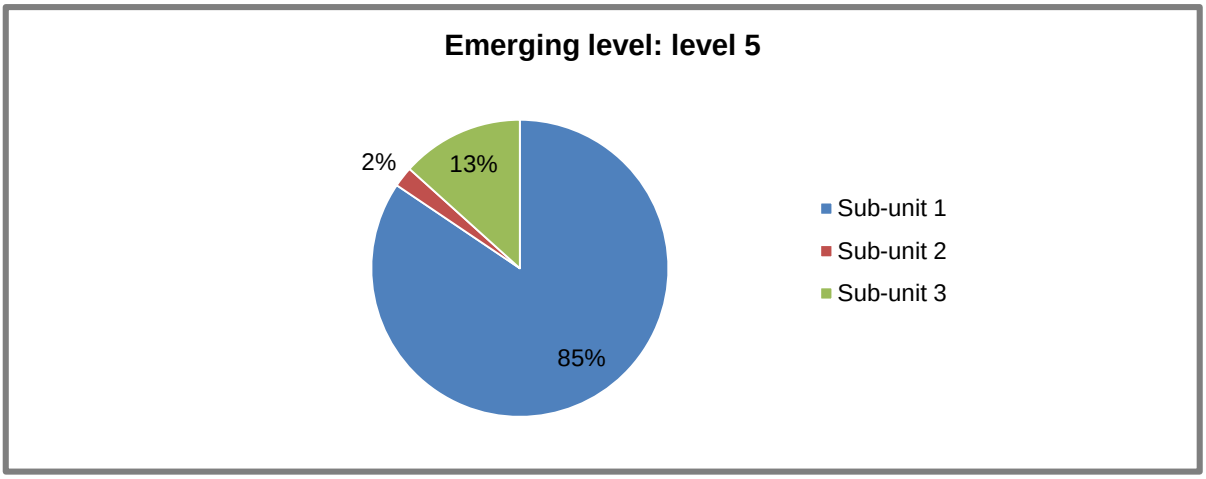


Figure 8.12: Emerging level: Level 5

Figure 8.12 provides a graph of the emergent level, by all three of the sub-units. Of the three sub-units, Sub-unit 1 showed the most involvement with social and ethical practices and projects. If one views all five levels from all the sub-units, as presented in Figure 8.13, the dominant level remains level 2.

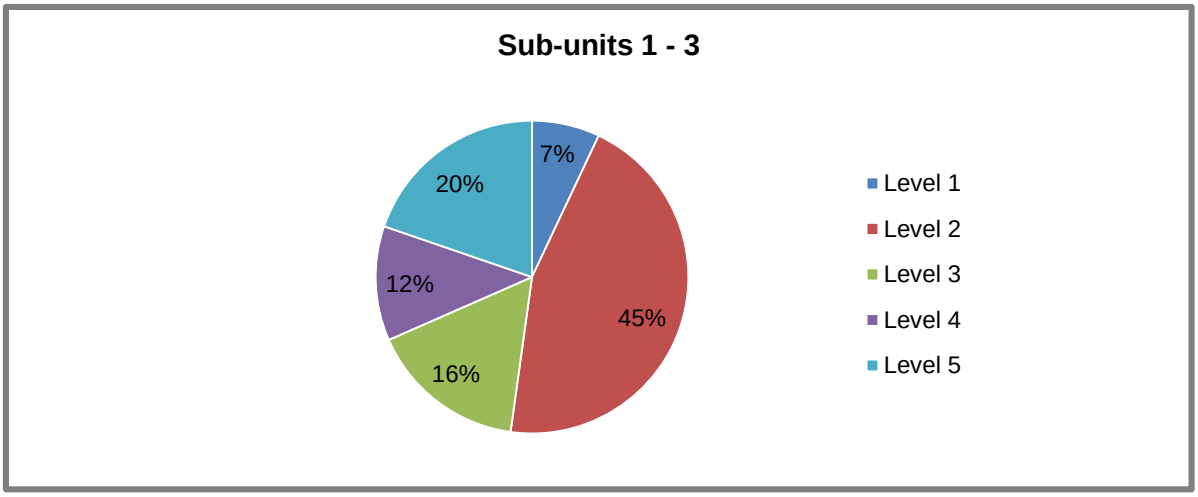


Figure 8.13: All sub-units, levels 1 – 5

However, level 5, of which the focus is social and ethical responsibility, becomes the second most dominant area. In their article, Armstrong and LeHew (2011) suggest that what is needed is a shift towards *transforming* practices instead of merely focussing on *maintaining* environmentally sustainable practices and processes. In other words, not only should environmental sustainability be achieved by using components that are least harmful to the environment, but business praxis in its entirety should consider process and approaches that are transformative. A transformative process should be based in empathy, and thus, I argue, that the paradigm needs to align and include an additional level.

In the paradigm, the levels are not mutually exclusive, and it is assumed that one level is a continuation of the previous level. An added level, such as level five, cannot merely be an

added level at the end, but seems to be a foundational level, on which all the other four levels are based. I therefore suggest the added level should be a foundation, for, at such a foundational level, it assumes that all practices and processes are viewed from, and influenced by, this foundation. Placing the added layer as a foundational layer also emphasises that people, and not processes or practices, are the most important drivers of environmental sustainability in the fashion industry.

8.5 SUMMARY AND DISCUSSION

In this chapter, synthesis of the empirical findings was presented by reviewing key points that emerged from the previous chapter, in order to consider similarities and aspects that are distinct in the three sub-units. Three aspects that were considered similar by all three sub-units were discussed, namely, fundamental principles that underpin the fashion design praxis of environmental sustainability, how design praxis was approached, and how the sub-units viewed their target market in relation to environmental sustainability. Areas that were similar between two sub-units included knowledge of environmental sustainability in fashion, the respective sub-unit's approach to product development, and what was considered meaningful with regard to environmental sustainability.

The most prominent aspects that emerged as a pattern between the sub-units, was with regard to certain negative aspects, such as unavailability of suitable environmentally sustainable fabrics, unsuitability of environmentally sustainable fabrics, and the lack of local manufacturing expertise, were constraints mentioned by all three the sub-units. Taking a broader holistic approach and basing environmental decisions on core values emerged in all three units, and this aligns to Esty and Wintson's (2009) eco mind-set. Incorporating consumer environmental needs in design (lifecycle, praxis), brand positioning, defining the eco-marketspace and considering brand reputation, as presented in Esty and Winston's (2009) business perspective strategy framework, are also noted as similarities in all three the sub-units. An important aspect to observe was that projects that have social impact were undertaken by all three sub-units. The areas of similarity between certain sub-units added to determining the common traits that underpin environmental sustainability in the South African fashion industry. Areas that emerged from the analysis that were not similar were discussed and these could provide insight into what is needed in the fashion industry to develop environmental sustainability.

The most significant area where the sub-units differed was the approach to environmentally sustainable fashion design praxis by each sub-unit, which emphasised how each sub-unit implemented their approach to environmental sustainability. A notable aspect that was discussed in this chapter was the opposing views of the four designers interviewed. What the

discussion highlighted was the possible knowledge-gap in fashion design and considered aligning to the three critical categories of opportunity for environmentally sustainable design praxis, suggested by Fletcher and Grose (2012). The chapter concluded with aligning each of the sub-units to the suggested Armstrong and Lehew (2011) paradigm and discussing the emergent level, as presented in the analysis. The concluding chapter in this research project reflects on the research undertaken.

CHAPTER 9

THE FINAL CHAPTER:

CONCLUSION AND RECOMMENDATIONS

Applying design thinking and skills to serve goals broader than commerce has given new momentum to design practice in the era of [environmental] sustainability.

Fletcher and Grose (2012:155)

The purpose of this chapter is to reflect on the research undertaken. This is achieved by reflecting on the trajectory of the research from beginning to end, and by providing recommendations for future research. Chapter 9 expands on the findings discussed in Chapter 8 and suggests a design-driven environmentally sustainable framework for the South African fashion industry, presenting the theoretical contribution this research study has made to the field. Chapter 9 therefore concludes Objective 6 of the research study. The objective of the chapter is therefore to trace what has been revealed, as presented in Figure 9.1.

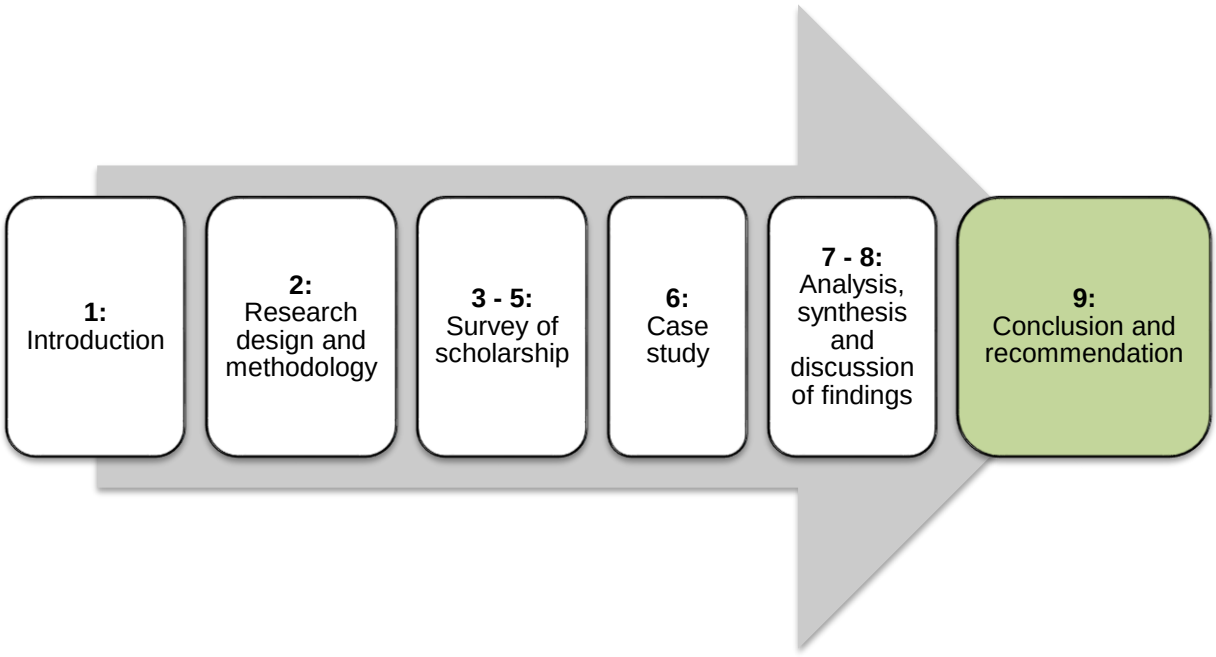


Figure 9.1: Schematic representation of case study – summary of this case study research and recommendations for further study
(developed by author)

The chapter is organised by reflecting on how the research question and sub-questions were answered, by presenting the environmentally sustainable fashion design case. The missing level of the suggested paradigm is discussed, and a new way of thinking explored. This is followed by reflecting on the contributions and limitations of the research. The chapter concludes with recommendations for further study.

9.1 DESIGN-DRIVEN ENVIRONMENTAL SUSTAINABILITY: A FASHION DESIGN CASE

The purpose of this research study was to develop an understanding of environmental sustainability in developing a design-driven fashion industry that is economically viable and sustainable within the parameters of sound environmental practices. The main question that was posed for this research was:

What is the role of environmental sustainability in the South African fashion industry within the framework of a design-driven approach?

The aim of this study was to develop an understanding – through a design-driven approach – of the role of environmental sustainability in the South African fashion industry within the parameters of sound environmental practices and economic viability. To answer the aim, three sub-questions were developed to guide the research study in answering the main research question.

9.1.1 Sub-questions, aims and objectives

The three sub-questions that were posed are reviewed in order to determine how the research answered these sub-questions. Each sub-question led to a specific focus within the study. Each subjective had two objectives to achieve. The sub-questions, as shown in Figure 9.2, were:

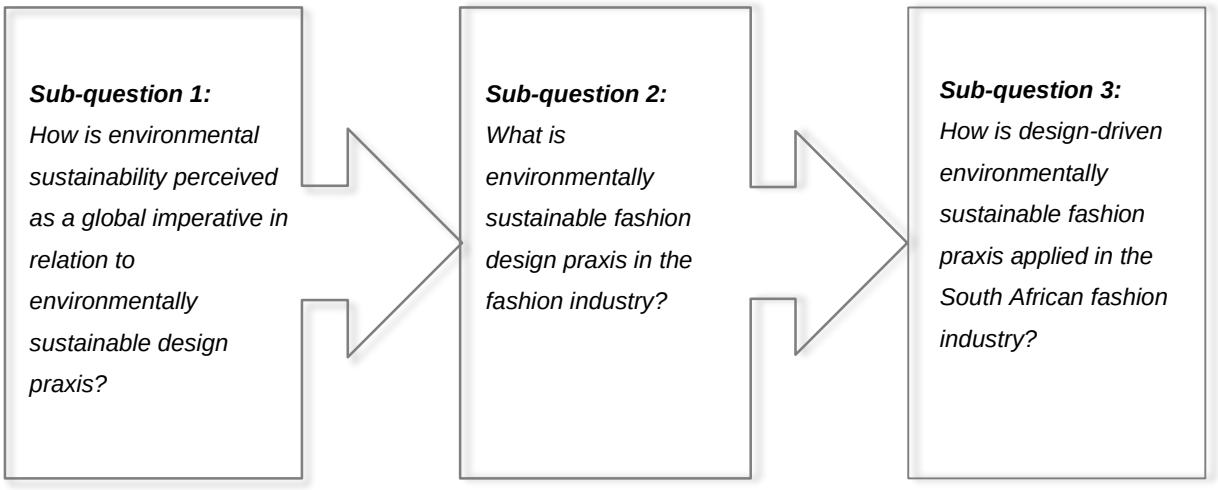


Figure 9.2: The sub-questions guiding the research (developed by author)

This sub-section firstly presents how this research study answered the main and three sub-questions posed in the research. The sub-section concludes with an aligned framework for implementation of environmental sustainability in the fashion industry of South Africa.

The aim of the first sub-question was to determine a global view on environmental sustainability in relation to environmentally sustainable design praxis. This sub-question was divided into two objectives namely, to determine the role of environmentally sustainable in business praxis by reviewing the work of prominent authors in business who combine business praxis and design (Objective 1). The second objective was to determine a base for environmentally sustainable design praxis by reviewing leadings authors in the field (Objective 2).

The aim of the second sub-question was firstly to determine the development of environmentally sustainable fashion (Objective 3). Secondly, the aim of the second sub-question was to explore fashion design praxis by examining environmentally sustainable fashion design praxis through reviewing prominent authors in the discipline of design and of fashion design (Objective 4).

The aim of the third sub-question was to determine fashion design praxis in the South African environmental fashion industry through two objectives. This sub-question was divided into two objectives namely, to develop a conceptual framework informed by the survey of scholarship and applied in the case study (Objective 5). The second objective (Objective 6) was to analyse, synthesise and discuss the findings of the case and make a theoretical contribution with regard to design-driven environmentally sustainable fashion design praxis to the field.

9.1.2 Answering Sub-questions 1 and 2

In this sub-section, the first and second sub-questions that the research posed are reviewed by reflecting on the survey of scholarship that was used to inform the conceptual framework. The survey of scholarship consisted of four areas of enquiry, namely environmental sustainability as a business imperative, design and environmental sustainability, fashion design and environmentally sustainable fashion design praxis.

The first sub-question was divided into two sections and formed part of the survey of scholarly work explored in Chapter 3. The aim of the first sub-question was to determine a global view on environmental sustainability in relation to environmentally sustainable design praxis. Therefore, the purpose of the first section of the chapter was to obtain a broader perspective on environmental sustainability as a business imperative. It considered economic advantages that environmental sustainability potentially poses, presented a possible business strategy for environmental sustainability and considered what the role of design has in the above. The literature revealed that the challenge of environmental sustainability for business was to find the balance between human needs, nature's deliverability and good business practices, and thus, for environmental sustainability to be perceived as economically advantageous, environmental sustainability should be planned and measured in order to see its value. Important drivers of this could include forming partnerships, being transparent and fostering accountability.

The second section of the survey of scholarship reviewed for Chapter 3 aimed to establish a base for environmentally sustainable design and provided an overview of environmentally

sustainable design praxis. Wahl and Baxter (2008:73) mention that immaterial dimensions of an individual's awareness, the worldview, values and aspirations, inform the intention behind the design and that these worldviews could lead to changes in lifestyle and meaning and are thus necessary for environmental sustainability. The literature revealed that one cannot isolate design from its context, thus, well-informed design solutions taken from a holistic perspective need to be considered instead of making hasty decisions that merely maintain unsustainable processes and behaviour. An integrated approach to design is thus essential. Chapter 3 achieved Objectives 1 and 2.

The aim of the second sub-question was, firstly, to explore the development of environmentally sustainable fashion, and secondly, to explore environmentally sustainable fashion praxis. These two areas informed the content of chapters 4 and 5. In Chapter 4, fashion design praxis was explored by reviewing the lifecycle of a fashion product, from fibre development to its disposal, in order to determine where and how environmental sustainability could be applied. This was achieved by dividing the lifecycle into five clusters, namely fibre to textile, product development, moving from factory to retail, use of the product, and disposal of the product. Environmentally sustainable processes in each of the five clusters were explored and discussed in order to develop a broad overview of how and where environmental sustainability is achievable within the entire fashion system. Chapter 4 therefore achieved Objective 3 of Sub-question 2.

Secondly, the aim of the second sub-question was to explore design theory in order have an understanding of what design-driven fashion praxis should be. Chapter 5 engaged with design theory from a broader perspective in order to understand how design theory impacts on the discipline of fashion design. The chapter ended by discussing a new suggested paradigm for environmental sustainability in the fashion industry. Chapter 5 thus achieved Objective 4 of Sub-question 2. These three chapters (Chapters 3, 4 and 5) formed the survey of scholarship which collectively informed the development of the conceptual framework. The conceptual framework was the basis for data collection and analysis.

9.1.3 Answering Sub-question 3

To answer the third sub-question, namely to determine how design-driven environmentally sustainable fashion praxis is applied in the South African fashion industry, the conceptual framework developed for the case study was applied to the three selected sub-units that made up the South African case, in order to reflect on local current practice of environmental sustainability. In this regard, Chapter 6 explored how the research process unfolded, Chapter

7 provided the analysis, synthesis and significant findings and Chapter 8 allowed for further discussion of the findings. These three chapter achieved Objective 6 of Sub-question 3.

The most significant aspect that emerged from the data was the fundamental principles that underpinned the application of environmentally sustainable design in all three of the sub-units. The importance of using suitable environmentally sustainable components was highlighted by all sub-units, as well as the unavailability of these components in the South African fashion industry. The main drivers, however, in all three sub-units, were the personal beliefs and ethical values that underpin the decision to operate within an environmentally sustainable paradigm. Linked to this was the need to expand their personal ethical values to socially responsible projects. Another aspect highlighted was the lack of knowledge by practitioners in the fashion industry and their target market. The aspect distinctive to each sub-unit was the varying approaches to fashion design praxis and how these affected the implementation of environmental sustainability in the fashion industry. What was brought to the fore was the need for a broader, more encompassing approach to understanding, awareness and implementation of environmental sustainability in the South African fashion industry. The human element and the broader encompassing approach mentioned above, prompted a re-alignment of the suggested Armstrong and LeHew (2011) paradigm for environmental sustainability in the fashion industry.

I thus conclude that three aspects are essential in the development of a design-driven environmentally sustainable fashion industry, and all three of these aspects are of equal importance. The first aspect suggests that personal ethical values are the main driver in developing an approach to environmental sustainability. The second aspect, ethics and personal values, underpins a holistic approach to environmental sustainability. The third aspect, knowledge, is (as a fashion educator) the most important aspect that is pertinent to the development of a design-driven environmentally sustainable fashion industry.

9.2 A NEW WAY OF THINKING

In this section what emerged prominently from the research study is further explored by considering what impacts on the decision to consider environmental sustainability in fashion design praxis, and to provide a framework for environmentally sustainable fashion design praxis.

9.2.1 Influences

One of the key conclusions mentioned in the Sloan report that is discussed in Chapter 2, is that sustainability is having an impact on how companies think and act.[142] According to Esty and Winston (2009:282), the economy and the environment are deeply intertwined and rank at the same level as other issues, such as globalisation: "…environmental strategy emerges as a critical point of competitive differentiation". This requires that companies have a holistic vision of the entire company, adapt their operations and its stakeholders, change their way of thinking, adopt ways of understanding the company's environmental challenges, and embed environmental stewardship in their core values. One of the aspects of the successful WaveRiders companies, identified by Esty and Winston (2009), is that they have a broad view of all issues, which influences everything, from investments to strategic decisions, whilst considering tangible aspects and intangible gains and contemplating possibilities for adding value up-stream and down-stream.[143]

Black (2010:252-253) reiterates that it is becoming increasingly important for the designer to influence decision-making. This is confirmed by Fletcher and Grose (2012), who suggest that the complexity of the fashion industry is apparent and therefore the role of design (and thus the designer) to drive or influence environmentally sustainable fashion has become increasingly important. Dorst (2011:524) and Greenberg Ellinwood (2011:2) argue that the level of expertise of the designer will influence how thinking is applied to the problem that needs solving. Design, because it is positioned at the beginning of the manufacturing process, can create positive feedback loops and have a noticeable or dramatic influence on subsequent processes (Fletcher & Grose, 2012; Smal, 2014). Esty and Winston (2009:245) emphasise a comprehensive, human-centred strategy when advantages for environmental sustainability are explored.[144] A holistic environmentally conscious approach in design is imperative.

Various influences emerged from the data in all three of the sub-units. I grouped these into three areas where the influences seemingly had an impact. The first related to people, projects or events that seem to have had an influence on the sub-units' business praxis. The second related to people or events within the sub-units that influenced the sub-unit's business praxis, and the third area is how the sub-unit's approach to business praxis influenced others. In this research, I name the three areas: influences that are outward-in, influences that are inward-in and influences that are inward-out, as presented in Figure 9.3.

[142] The Sloan report, compiled in 2009, is discussed in Chapter 2 (Burns *et al.*, 2009:3-6).
[143] The successes of the WaveRiders companies are discussed in Chapter 2, under section 3.1.2.
[144] Refer to chapter 3, section 3.1.3.2.

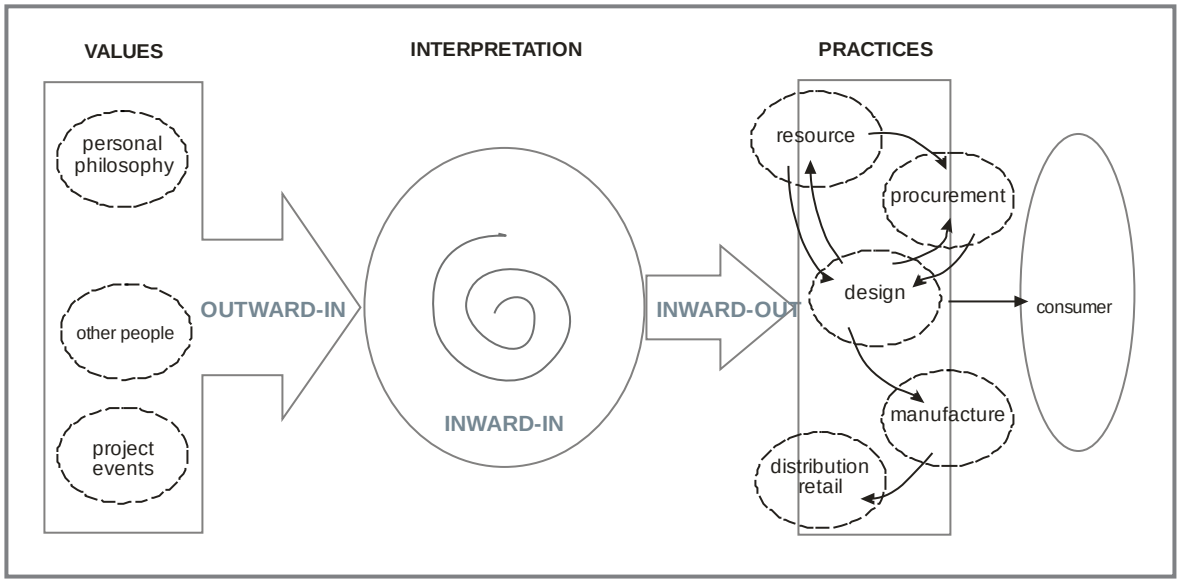


Figure 9.3: Influences
(developed by author)

In Sub-unit 1, the data clearly reflects how personal ethical approaches can influence operations and how management chooses or aligns to specific people or projects because of the influence the individual or project could have on the business approach of the sub-unit.[145] The above-mentioned can be considered as outward-in. In Sub-unit 1, the outward-in influences have a lateral internal effect (inward-in) of which the *iCAN* initiative is a good example. The third influence in Sub-unit 1 – inward-out – can be seen in how the sub-unit selects and deals with the supply chain with regard to ethical practices through emphasis on Fair Trade, transparency and honesty.

In Sub-unit 2 the three types of influences are not as apparent as with Sub-unit 1. However, Participant 5, who is a founder member of the company, has a personal approach to environmental sustainability that can be considered as an inward-in influence. Selecting specific types of staff members (for example, the designer participant of Sub-unit 2) adds to the inward-in approach. Thus, a personal approach also seems to be the driver of the inward-out approach to practice in Sub-unit 2.[146] The inward-out approach is very clearly visible in the method of operation in this sub-unit. A strong aspect that informs the influences in the sub-unit is social awareness. As with Sub-unit 2, Sub-unit 3 operates from a personal approach to environmental sustainability. This is most evident in Participant 7's public profile, eco-

[145] Examples are the inclusion of a retired executive member of Body Shop as an executive Board member for the sub-unit, selected because of his ethical approach to retail and the Earthchild project and the people who drive the project, to which Sub-unit aligns (Participant 1, 2013; Participant 2, 2013).
[146] An example is the practice of repair offered by Sub-unit 2.

consciousness and his approach to creating awareness through public addresses and projects undertaken by the sub-unit.[147]

The three areas, namely, influences that are outward-in, influences that are inward-in and influences that are inward-out, inform my suggestion with regard to the adapted paradigm. The three areas align to values and ethics, to a holistic approach and to knowledge that I suggest as being pertinent in a design-driven environmentally sustainable approach for the fashion industry.

9.2.2 A suggested framework for environmental sustainability for the fashion industry

In the paradigm put forward by Armstrong and LeHew (2011), each layer has a specific focus. For the first layer (as depicted in Figure 8.14) the focus is on product, for the second layer the focus is result, the third layer focusses on need and in the fourth layer the focus shifts to sustainable lifestyles. The fifth suggested layer in the adapted paradigm cannot merely be placed on top of the previous four layers, as the fifth layer centres on people who drive and implement environmental sustainability. This layer, therefore, could be considered as the core driver in implementing environmental sustainability. The above aligns to what Esty and Winston (2009) refer to as basing environmental decisions on core values for short term and long term benefits.[148]

The core driver is central to the strategies applied in each of the four suggested layers, from maintaining environmentally sustainable praxis to environmentally sustainable praxis which is transformative, in order to ensure the continuance of environmental sustainability. The focus of the additional level is people: how people think, how people are influenced and how thinking and influences shape action. The additional layer needs to form the core of the paradigm and therefore a quintuple helix structure is suggested for the framework.

The quintuple helix framework is based on the quintuple helix by Carayannis, Barth and Campbell (2012:1), who use such a model, for "…sustainable development of a knowledge economy". The authors suggest this model as a tool for creating synergy between economy, society and democracy, in which global warming is considered. Carayannis *et al.* (2012:3-4) propose that the quintuple helix can be used as a "…framework for transdisciplinary (and interdisciplinary) analysis of sustainable development and social ecology". In 2009 the European Commission identified socio-ecological transition as one of the major challenges for economies today. The suggested quintuple helix model is suitable as it is oriented towards

[147] An example is the *summer #protest campaign* (Document 24, 2012).
[148] Refer to Chapter 3, under section 3.1.2.

problem-solving and sustainable development, and encourages socio-ecological transition through knowledge production and innovation and becomes the pivotal driver for progress (Carayannis *et al.*, 2012:1-2).

Carayannis *et al.* (2012:5) suggest that in the quintuple helix, the natural environment is the:

> …central and equivalent component of and for knowledge production…and serves for the preservation, survival and vitalisation of humanity, and the possible making of new green technologies… .

They argue that the most important element in the model is knowledge and suggest that the exchange of knowledge is possible through five identified sub-systems, namely, the education system, the economic system, the natural environment, the media and culture based public system and the political system. Knowledge is circulated from one sub-system to the next sub-system and, by doing so, provides knowledge-input into a sub-system and creates knowledge-output (know-how) from the sub-system, which in turn provides knowledge-input for the following sub-system, as illustrated in Figure 9.4. The five sub-systems are as follows:

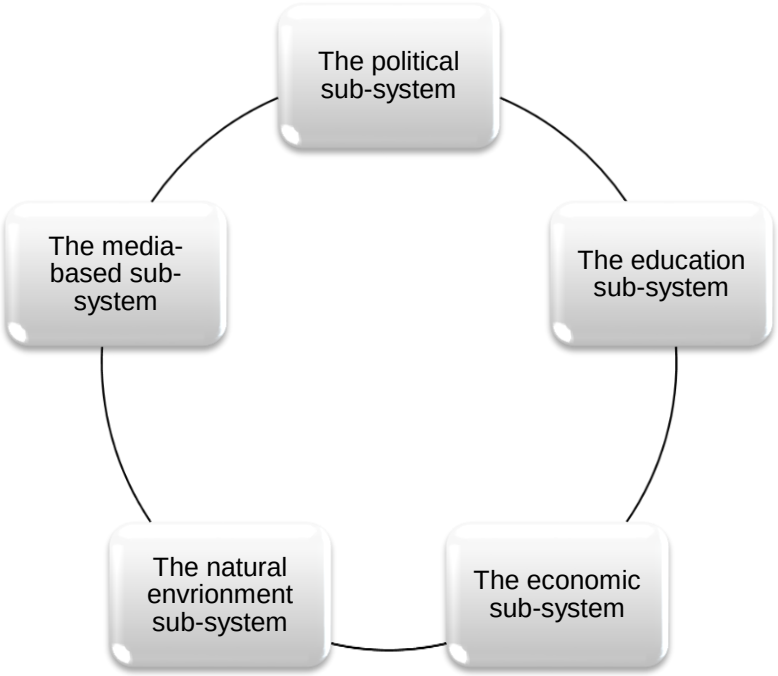


Figure 9.4: Components of the quintuple helix model
(Carayannis, *et al.,* 2012)

The quintuple helix model allows knowledge exchange in order to "…promote knowledge-production-based sustainable development" (Carayannis *et al.,* 2012:6). Carayannis *et al.* (2012), specifically apply this model to human and social capital. In this research, I adapt and apply the quintuple helix model as a framework to the suggested paradigm and findings discussed in Chapter 8. The framework, allows for the inclusion of the 'missing layer' identified

in Chapter 8. The five sub-systems of the quintuple helix model are aligned to the environmentally sustainable fashion design (EFSD) model as presented in Table 9.1.

Table 9.1: Quintuple helix versus the environmentally sustainable fashion design-driven framework

Quintuple helix model	Aligned framework for environmental sustainable fashion design (ESFD)
Education	Education
Economic	Economy
Natural environment	Natural environment
Media-based and culture-based public	Fashion consumer
Political	Support

Each sub-system as described by Carayannis *et al.* (2012:7-9), and the application thereof to in this research, is as follows. Two important aspects should be noted, namely input in the form of knowledge and output in the form of skill. Both input and output require people that communicate, either by giving knowledge, or by communicating something that inspires something or someone else. Therefore communication becomes the key driver between the sub-systems in the quintuple helix structure.

In the Carayannis *et al.* (2012) model, the education sub-system focusses on investment in the education sub-system, provides impulse for knowledge creation and results in output through skills gained and through research. In the ESFD framework, education for environmental sustainability for all levels in the industry is identified as an immediate need by all the participants in the research. This includes an understanding of what environmental sustainability in the fashion industry is and how it can be applied. It also allows for prospects for focussed job opportunities, services, or a new approach to 'doing business' in environmental sustainability, as suggested by Fletcher and Grose (2012:180-181).

The knowledge gained from the education sub-system becomes the input of knowledge into the economic system, allowing knowledge creation. This facilitates opportunities in the further development of a "…future-sensitive green economy" (Carayannis *et al.* (2012:7). They argue that an environmentally sustainable sensitive approach requires values such as social responsibility, which, in turn, encourages a new output of know-how and innovation. For the ESFD framework, ethics and social responsibility, as drivers for environmental sustainability in the fashion industry, are presented in Figure 9.5, as the missing layer of the paradigm presented in Figure 8.14. Fuad-Luke (2012) also suggests exploring alternate economies such as service, co-, open, eco-, non-monetary, time-based economies, as well as focussing on the local economy. The new knowledge output (know-how) of the economic sub-system provides

opportunity for new thinking with regard to environmental sustainability and the natural environment sub-system.

The knowledge gained from the economic sub-system, provides new knowledge for the natural environment sub-system, in order to understand better use of resources, less waste of resources and alternative practices to the use of natural resources for the fashion industry. In the ESFD framework, the lack of resources is suggested as one of the constraints towards implementation of environmental sustainability in the South African fashion industry. In addition to the above-mentioned, a lack of eco-awareness and interest in environmental sustainability with regard to clothing by the consumer is flagged as a major problem area. Therefore the knowledge gained in this sub-system provides valuable input to the fashion consumer sub-system.

Carayannis *et al.* (2012:8) argue that the focus of this sub-system should be balanced lifestyles, regenerative technologies and a sensitive approach to using finite natural resources. The knowledge gained from the preceding sub-systems should inform the media-based and culture-based public through encouraging environmentally sustainable lifestyles. The above is possible through communication, providing information and suggesting simple, affordable, eco-conscious strategies for the implementation of an environmentally sustainable lifestyle. The media-based public provides the "…necessary social capital of the culture-based capital, on which a society depends for sustainable development" (Carayannis *et al.*, 2012:8). For the ESFD framework the focus is on the fashion consumer. Buy-in by the fashion consumer is essential for the development of environmental sustainability in the fashion industry. In this research, one of the aspects that is noted is a lack of knowledge by the broader consumer-base, and all sub-units emphasise how important knowledge of environmental sustainability in the fashion industry is. The knowledge gained in this sub-system provides input into the support sub-system.

According to Carayannis *et al.* (2012:9), the knowledge in the political sub-system creates impulses for knowledge creation of which the output could be suggestions, investments and objectives. The authors refer to the last sub-system in the quintuple helix as a necessary step in providing platforms to assist and aid development for environmental sustainability (Carayannis *et al.*, 2012:9). One of the participants in the case study mentioned that legislation could be a deterrent to economic growth in the fashion industry in South Africa. However, the establishment of bodies such as the Sustainable Textile and Apparel Cluster (SASTAC) has to play an important role in the development of environmental sustainability in the textile and fashion industry in South Africa. This sub-system in the EFSD framework is therefore named 'support'. The research undertaken by initiatives such as SASTAC is a good example of how

knowledge gained in this sub-system should inform the following sub-system, namely education.[149]

The framework for environmentally sustainable fashion design could thus be envisaged as presented in Figure 9.5.

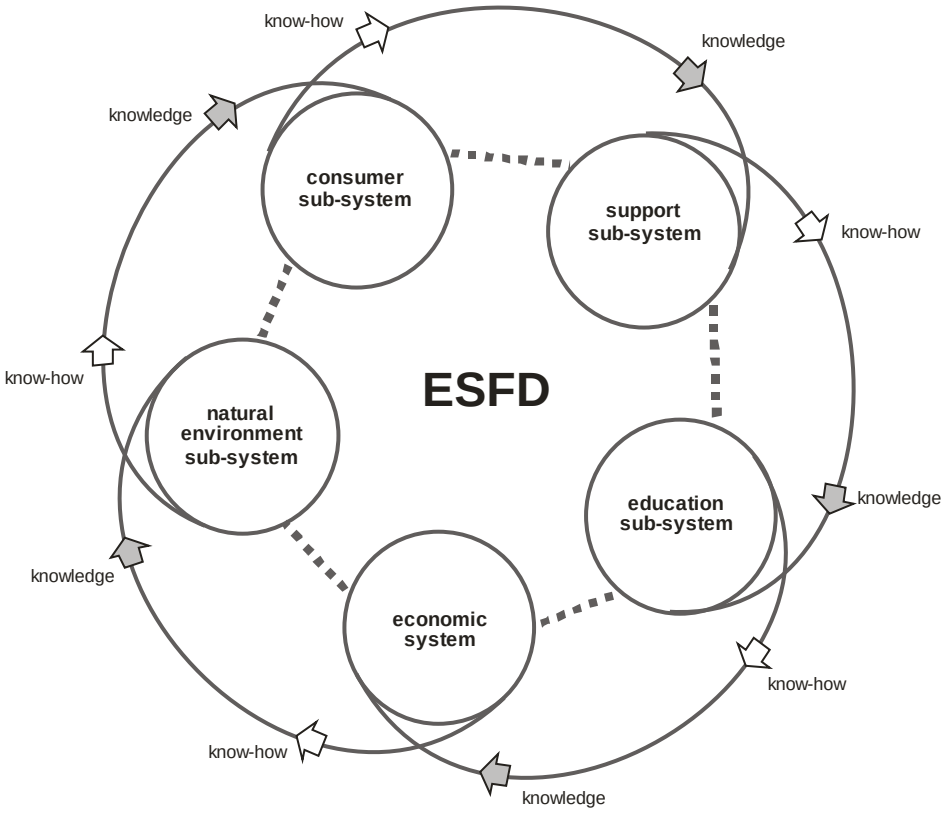


Figure 9.5: Framework for ESFD
(developed by the author, based on Carayannis *et al.,* 2012).

Most notable of a helix structure is the continuous process of one sub-system developing know-how that can be applied as knowledge for the next sub-system. Each sub-system therefore cannot be separated from the previous or the following subsystem. I therefore suggest that it is specifically this interconnected structure that should be considered for education, economy, the natural environment, the fashion consumer, and support structures, which are all needed. The interconnected structure could also aid the notion of designing empathy, presented in Chapter 5, to flourish. An interconnected and integrated framework could assist and contribute to the development of design-driven environmental sustainability in the South African fashion industry. As gaining knowledge and imparting know-how requires people that communicate, communication through fashion design praxis could provide specialist knowledge needed for the implementation of environmental sustainability by fostering an empathic approach to fashion design in such a way that it promotes eco-

[149] The National Sector Body (SASTAC).

awareness and eco-consciousness, and, through environmentally sustainable fashion design praxis, induces and inculcates behavioural change.

This section presented aspects that emerged from the literature and the case study and showed how the three sub-questions of this research were answered. The sub-sections concluded with the aligned framework for the implementation of environmental sustainability in the fashion industry of South Africa. The following section will provide reflections on the contribution of the study.

9.3 REFLECTING ON THE CONTRIBUTION OF THE STUDY

In this section several aspects are presented in order to note the contributions of this research towards the development of environmental sustainability in a design-driven South African fashion industry. Four specific aspects are noted, namely environmentally sustainable design praxis as a global imperative, the role of design and designers in environmentally sustainable fashion design praxis, current fashion design praxis in South Africa, and the new suggested framework.

9.3.1 Environmental sustainable design praxis as a global imperative

The survey of scholarship emphasised the importance of environmental sustainability in any industry. Although the importance is confirmed by the analysis, the slow adoption, lack of interest and lack of eco-consciousness by the South African fashion consumer is mentioned by all three sub-units. Comments, such as made by Participant 2 (2013:12) emphasise the lack of knowledge and interest:

> A younger generation of consumers is more conscious. I think less so in South Africa. But as a broader trend, if you look at the UK or some of the other first world markets, it's a much more aware consumer. And the consumer there, I think, has driven the food market in the direction that it's gone. And for fashion, I think, they'll also drive [it]. But, I think in South Africa the [fashion] consumer is not as educated.

Participant 6 (2013: 6) adds to the above by mentioning:

> I think that South African consumers have no choice but to learn [a] little bit more about it….maybe it is not going to happen in the next 10 years, maybe it's further along in the future, but things have to become more sustainable… .

It is also this lack of interest in environmental sustainability in fashion that poses the danger of keeping environmentally sustainable clothing in a high-priced niche market that only services a small percentage of South African consumers. Fletcher and Grose (2012) argue that

although these smaller high-end markets are needed and provide opportunity for alternate approaches to design and manufacturing, it is specifically in the high volume manufacturing environment where the environmental impact needs to be applied and which will result in actual benefit to the environment.

A contribution this research has made is to engage with the fashion industry, by means of the case study, in order to further the discussion and understanding of the importance and development of an environmentally sustainable fashion industry in South Africa. I argue that a more comprehensive understanding of the drivers for environmental sustainability in the fashion industry can only encourage further development. In addition, the research has broadened the understanding of what impedes the development of environmental sustainability in the fashion industry.

9.3.2 Current fashion design praxis and the role of designers

All sub-units highlighted the lack of knowledge and understanding of environmental sustainability in the fashion industry, which was confirmed by the analysis of the data. Providing specialist knowledge, contributing to consumer consciousness and implementing environmental sustainability in the South African fashion industry emerged as critical areas of concern. What emerged from the data was the wrongful assumption that this knowledge is easily applied in any sector in the entire fashion system in South Africa. Fletcher and Grose (2012) specifically refer to the above-mentioned as 'intellectual timidity' and suggest that designers take an active role in implementing environmental sustainability in the fashion industry. According to the authors (Fletcher & Grose, 2012:155-179), the designer working in an environmentally sustainable framework should encompass the roles as presented in Table 9.2, embrace the knowledge gap and take responsibility for developing environmental sustainability in the fashion industry. Four roles are identified, namely, the designer as communicator, as facilitator, as activist, and as visionary entrepreneur.[150]

Table 9.2: The environmentally sustainable fashion designer
(Smal, 2014:399-405)

designer as **communicator and educator**	should result in design-leading-consumers
designer as **facilitator**	acknowledges that the skills required by the designer are complex
designer as **activist**	places emphasis on corporate social responsibility through and in design
designer as **visionary entrepreneur**	requires thinking outside of the normal business models

[150] The four roles of the designer as presented here are discussed in Chapter 5, under section 5.3.

The authors suggest a way of design thinking, based on building knowledge through experience and that designers should move from being a component in the supply chain to being at the hub of change (Smal, 2014:404). Fashion designers should engage in design activities that shape the industry and consider building new models of commercial practice that embrace systemic change. Design-driven environmentally sustainable fashion design praxis therefore needs to critically engage with influences and actions that shape and define environmental sustainability.

The above-mentioned statement requires an engaged designer, which is different from the current practice in the fashion industry of minimising unsustainable processes, products and consumer behaviour (Smal, 2014). Fletcher and Grose (2012:180-181) propose the following:

i. Fashion designers who have an impact-driven approach to fashion design and not only a trend-led approach. The result thereof is that design becomes the driver of change, and thus leads to design-led environmentally sustainable fashion design praxis.
ii. Fashion designers should have an approach to business which embodies social, cultural and environmental values.
iii. Fashion designers should become strategists who embrace and foster change.

The above–mentioned three approaches aid the four roles of the environmentally sustainable fashion designer, as presented in Table 9.2. In addition, the four roles emphasise Dorst's (2011) approach to design. Dorst (2011) argues that designers should not remove the design process from the design context, the design content, the role the designer has in the design problem and the type of design activity, as discussed in Chapter 5.[151] Added to the above discussion, are the levels of expertise of the designer.

The aim of this research was to develop an understanding – through a design-driven approach – of the role of environmental sustainability in the South African fashion industry within the parameters of sound environmental practices and economic viability. The literature clearly emphasises the importance of design, however the analysis did not entirely align to this. Apart from the necessity for fashion designers to understand the role of design and the designer in the development of environmentally sustainable fashion in South Africa, I argue that the discourse on fashion design, from a theoretical perspective, needs to be explored.

[151] Dorst's (2011) approach is discussed in Chapter 5, under section 5.1.2.

9.3.3 Fashion design education

The above-mentioned knowledge gap, the role of fashion design praxis; and the role of fashion designers in the South African fashion industry, all allude to the need for critical engagement by the fashion industry and by fashion design education in particular. As a fashion design educator, a fundamental shift in fashion design education in South Africa needs to occur. Environmental sustainability cannot merely be regarded as a topic of discussion. In line with the engagement needed and an understanding of environmental sustainability by designers, a contribution that this research makes is that fashion design education should be approached from a holistic, environmentally sustainable view, one in which environmental sustainability is embedded in the curriculum and is a fundamental driver of the content of the curriculum.

9.3.4 New framework

Both the suggested paradigm and the framework for environmental sustainability in the fashion industry are unique contributions that this research makes. Further exploration could test and expand the framework, and determine if the framework is applicable to other design disciplines with regard to environmentally sustainable praxis.

In this section, four specific contributions the research made are presented, namely, the drivers for environmentally sustainability in the fashion industry, the role of design and designer, the approach of fashion design education, which culminates in a suggested framework that could facilitate the development of environmental sustainability in the South African fashion industry. In the next section, the limitations observed in this research are discussed.

9.4 LIMITATIONS

In this section, the limitations of this research are presented in order to inform future research on this topic. The three most significant limitations identified are:

1. Perhaps the most significant limitation of the study is the sample size. Originally, four companies were invited and agreed to participate in the study. However, one company was taken from the case study as described in Chapter 6. Although 3 sub-units participated in the case study, a fourth sub-unit could have added more depth to the research. Therefore this research must not be considered to be representative of the fashion industry of South Africa with regard to environmental sustainability, but could be considered as a valid ‘snapshot’.

2. Environmental sustainability in the fashion industry is highly complex and this research only attempted to probe a section of this. The purposive sample in this research focussed predominantly on using virgin organic fabrics, such as organic cotton. However, there are other companies that contribute to a broader perspective on environmental sustainability by using recycled fibres; for example, the women's galaxy fleece jacket for the label K-way, which is produced by using 65 percent recycled polyester and 35 percent virgin polyester and is manufactured locally. Both the case study sub-units and the mentioned example can be considered as environmentally sustainable fashion. A variance of environmentally sustainable application in the fashion industry could have added an interesting dimension to the research outcomes.

3. The framework presented in this chapter emerged from the data and is presented as a possible framework to implement environmental sustainability in the industry. Further engagement and testing could have refined the framework.

In this section, three specific limitations of the research are discussed. In the next section of this chapter, reflections on the way forward are presented and discussed.

9.5 RECOMMENDATIONS

In this section, a way forward is presented in order to highlight possible areas for further research. I therefore suggest three possible future research initiatives that have emerged from this research, which will facilitate the development of environmental sustainability in the South African fashion industry. The first suggestion for further research focusses on environmental sustainability in the fashion system, the second suggestion focusses on fashion design praxis with regard to the development of environmental sustainability, and the third suggestion for further research is on the suggested framework.

9.5.1 Further research on environmental sustainability in the fashion industry

In order for the fashion and textile industry of South Africa to develop, several interventions are needed. At the SASTAC workshop in December 2014, emphasis was placed on understanding the needs of the fashion system of South Africa in relation to environmental sustainability. Research was presented as a method of gaining and disseminating information. The levels of the paradigm, presented in Chapter 5, and the framework for EFSD presented in this chapter, provide opportunity for further exploration of environmentally sustainable design.

A similar research project, using the same conceptual framework applied to a different case consisting of sub-units that in particular use man-made fibres that are considered environmentally sustainable, could provide interesting data. A comparison between such a research and this research could provide an enhanced overview of the South African fashion industry.

9.5.2 Research on fashion design praxis with regard to environmental sustainability

Research in design praxis of the South African fashion industry is almost non-existent, therefore any research in this field will add value to the knowledge domain. In particular, research on design praxis in relation to environmental sustainability will support and develop the South African fashion industry. In a broader context, design as an area for research has developed intensely in the past three decades. However, an engagement with research on fashion design praxis and design approaches, such as that presented by Dorst (2008),[152] and Fletcher and Grose (2012),[153] has not been explored in the fashion design discipline. The practice of designing fashion is in a way aligned with other design disciplines in which products are designed. However, because fashion products with their related consumer demand are a primary driver of the process, the way in which fashion designers approach the design process differs from any other design process. Thus, understanding fashion design praxis, which includes context, content, role players, levels of design expertise and design activity provides great opportunity for further research.

The above, in relation to design within an environmentally sustainable framework for the South African fashion industry, or the knowledge gap, provides even more opportunity for research. As Fletcher and Grose (2012) suggest, encouraging designers to engage with the technical aspects of the discipline requires that fashion design education re-thinks current practices in fashion design education.

9.5.3 Application of framework to other disciplines

The environmentally sustainable framework for the fashion industry, presented in Figure 9.10, provides an opportunity for further research. The application of this framework in the various sub-systems described could be explored. In addition, the application of this framework to other areas with regard to environmental sustainability in the fashion industry could provide

[152] The levels of design expertise as presented in Chapter 5, Section 5.1.2.
[153] The role of fashion design(ers) as presented in Chapter 5, Section 5.2.1.

comparative data. The framework could also be applied to other related design disciplines and thus could provide additional opportunities for research.

9.5.4 A last thought

I would like to conclude this research with a few final observations of my journey. Although research in the discipline of fashion design is still young, many fashion designers would not consider research as a career option and find research in itself a daunting task. Reflecting on the journey, I have found that the design process is not that different from a research process. Generating ideas that culminate in products is very similar to generating ideas that culminate in a written research report. It entails the same processes that are, in some instances linear, but in most instances iterative. It includes identifying the problem, ideation, identifying the constraints, selecting, testing, applying, evaluating, refining and presenting the final product. Participant 1 (2013:18) states:

> …[it is] not about the product at the end of the day, it's about how one gets there. It's not about the destination, it's about the journey.

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APPENDIX A

CONSENT LETTERS

INFORMATION LEAFLET AND INFORMED CONSENT FOR COMPANY PARTICIPATION

PROJECT TITLE:

The role of environmental sustainability in a design-driven fashion industry: A South African case study.

Primary investigator: Ms Desiree Smal, MTech (Fashion)
Supervisor: Dr Ingrid Stevens, DTech, Department of Fine and Applied Art, Tshwane University of Technology, Pretoria
Co-supervisor: Prof Mugendi M'Rithaa, Department of Design, Cape Peninsula University of Technology, Cape Town.

Dear Research participant,

You are invited to participate in a research study that forms part of my DTech-studies. This information leaflet will help serve to elucidate the project and will ask you to formally agree to participation. Before you agree to take part, you should fully understand what is involved. You should not agree to take part unless you are completely satisfied with all aspects of the study.

WHAT IS THE STUDY ALL ABOUT?

> Do we build a product that is long lasting and durable that you never have to replace it? Or do we build products that disintegrate after a while so that there is no landfill? Or do we create a product that self-cleans itself, so that you preserve water resources? […] How do we solve the problem of sustainability without compromising the athlete's performance? Do we build products that can be totally recycled? How do you dismantle a product, do you make products with dissolvable thread?
>
> (DeLong, 2009:112)

The fashion industry is complex. The industry consists of a long and fragmented supply chain that feeds into design, manufacturing, buying and distribution pipelines, which very often operate in a global arena.

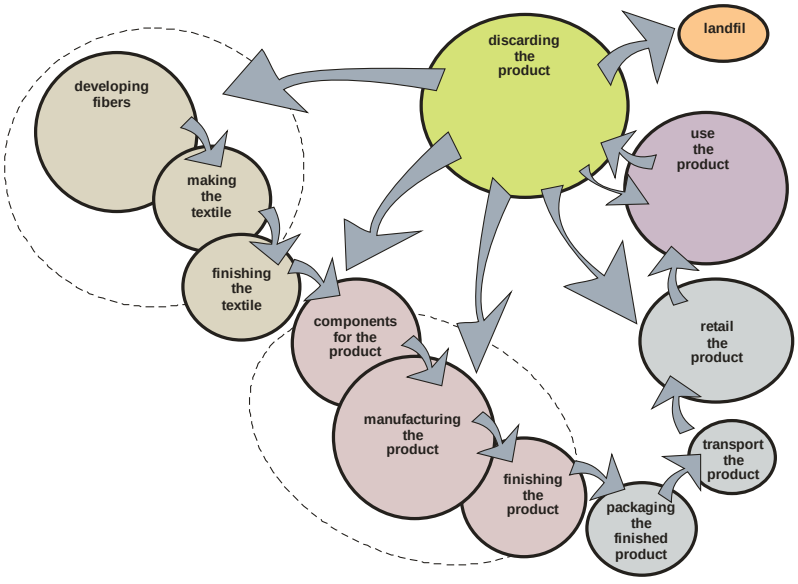

Figure 1.1: A view of the total lifecycle of a garment product
(image developed by author)

Black (2010:252-253) reiterates that it is becoming increasingly important for the designer to influence decision making because fashion as a global business can have components produced in several part of the globe along the stages of the supply chain. It is the complexity of the industry that becomes questionable when discussing environmental sustainability. Fuelled demand and heightened consumer

expectation has led to more production of clothing, very often resulting in cheaper clothing that lasts for shorter periods [termed disposable clothing as it might only be worn a few times] and higher consumption and as Black (2010) mentions 'a devaluation of clothing'. This 'fast fashion' has consumers return for new styles more often and perpetuates the faster production cycle. According to Black (2010:253) increased environmental awareness and a demand for transparency in the "…provenance and manufacturing of products has grown exponentially". Environmental and ethical issues arise at each stage mentioned in the figure above. Black places all the processes under the banner of the pre-consume phase. Furthermore in the life cycle of a product, use, laundering and disposal, processes undertaken by a consumer, can be grouped as post-consumer phase and the impact of the above processes need to be considered. Transparency is a key issue in this. Black (2010:257) also refers to establishing new partnerships between producers and consumers.

Sustainable eco-fashion can only be implemented by people knowledgeable in the design and manufacturing field, and design development, which as suggested by Hethorn and Ulasewicz (2008), starts with an integrated approach. Almost all notable works from authors in the discipline of fashion design agree that fashion design and fashion designers are the key decision makers in the development of clothing that is environmentally sound. If one explores the world of sustainable fashion design and environmentally friendly fashion products, the complex nature of this discipline becomes apparent (Fletcher and Grose, 2012). All materials impact on sustainability in some way, but it is what is hoped to be achieved with regard to environmental sustainability that results in complex set of trade-offs (Fletcher & Grose, 2012:13). Fletcher and Grose (2012) group possible environmental sustainable strategies into four areas namely, (1) developing renewable source material such as renewable fibres; (2) effective use of resources such as water and energy, minimising chemical impact and lowering carbon footprint; (3) taking fair labour practices into consideration and conditions of its [fibre, product] creation and lastly (4) reducing waste and considering the lifecycle of the product at product development stage.

The aim of this study is to develop an understanding – through a design-driven approach – of the role of environmental sustainability in the South African fashion industry within the parameters of sound environmental practices and economic viability. The methodology that will be applied is a single descriptive case study consisting of four companies (referred to as units) that have indicated that they apply sustainable eco-practices. All four of the companies have initially agreed to take part in the study.

WHAT WILL BE REQUIRED FROM YOUR COMPANY FOR THE STUDY?

The following permission is needed by your company prior to data collection:

1. Consent by the company to participate in the study by means of interviews with you and/or staff members in your organisation. A tape recorder will be used during the interviews. Field notes will be made during all data collection. Only personnel (if applicable) that you recommend and that have agreed to participate will be interviewed (refer to the letter of consent completed for employees). Confidentiality and anonymity of all personnel interviewed is ensured.
2. Permission to read company documents that you *wish to disclose* and that can assist me in understanding:

- The company's vision and philosophy for developing eco-fashion;
- Company strategy in achieving the above;
- Processes in implementing strategies; and
- Quality processes in ensuring the implementation as successful

Only documentation where you have given express permission to review will be considered. All documents reviewed will be treated as confidential.

3. Permission to review and appraise collections developed between January 2012 and November 2013, or any other that you may feel might be applicable and informative. The collections that will be reviewed are those that are already in the public domain.
4. Permission to use/or not to use the company name in my thesis. Should you prefer that the company/label is not used in the study a code will be assigned to your company/label (refer to informed consent form DS-1).

The following is required from your company to enable me to collect the necessary data:

1. Interviews with you and members of your organisation as stipulated by you, or additional people that you feel might be valuable to interview. By signing the letter of consent you indicate that you acknowledge confidentiality and anonymity of all personnel interviewed is ensured.
2. I hope to be able to have only one interview per candidate, but might require additional interviews if necessary.
3. All interviews will be set on a date and time convenient to the candidate interviewed and will be treated as confidential.
4. Permission to record all interviews. All recording, transcripts and field notes will be kept in a safe place for a period of five years.
5. Completion by the company of the consent form.

WHAT ARE THE POTENTIAL BENEFITS THAT MAY COME FROM THE STUDY?

You will receive a copy of the thesis once completed. The benefits of participating in this study are:

1. You will make a contribution towards design research and, due to the nature of my profession, fashion design education in South Africa.
2. The results of the research might be of value to your organisation.

WHAT ARE YOUR RIGHTS AS A PARTICIPANT IN THIS STUDY?

The participation in this study by your company is entirely voluntary, and the company has the right to withdraw at any stage. Should your company wish to withdraw, I would request to have the opportunity to have an exit interview.

HOW WILL CONFIDENTIALITY AND ANONYMITY BE ENSURED IN THE STUDY?

Confidentiality will be ensured in the following manner:

1. All the data that you provide during the study will be handled confidentially.
2. The name of your company will not be disclosed unless you give permission to do so. Should you wish the company to remain anonymous, a code will be assigned (refer to informed consent letter DS-1).
3. The names of staff members of your organization that will be interviewed will not be disclosed.
4. Transcript of the interviews will be made available to the candidates interviewed, to ensure that the information contained is true and correct.
5. This means that access to your data will be strictly limited to the researcher, the supervisors of the study and the designated examiners (appointed by Cape Peninsula University of Technology).
6. Your data and personal information will be kept and stored in a confidential format which will only be accessible to the researcher.

WHAT ARE THE POTENTIAL RISKS OF THE STUDY?

This study is unlikely to lead to undue or unfair competition or competitive advantage, but I must alert you to this possibility.

IS THE RESEARCHER QUALIFIED TO CARRY OUT THE STUDY?

The researcher is an adequately trained professional and researcher in the study field covered in this research project. In addition, the researcher has been in fashion design education for the past 25 years.

HAS THE STUDY RECEIVED ETHICAL APPROVAL?

The Faculty Research and Committee and the Research Ethics Committee of the Cape Peninsula University of Technology have approved the formal study proposal. All parts of the study will be conducted according to internationally-accepted ethical principles.

WHO CAN YOU CONTACT FOR ADDITIONAL INFORMATION REGARDING THE STUDY?

The primary investigator, Desiree Smal, can be contacted during office hours at Tel (011) 559 1399, or on her cellular phone at 082 828 6107. The study leader, Prof Ingrid Stevens, can be contacted during office hours at Tel (012) 382-6135. Co-study leader, Prof Mugendi M'Rithaa, can be contacted during office hours at Tel (021) 469-1027.

DECLARATION: CONFLICT OF INTEREST

There is no conflict of interest that may influence the study procedures, data collection, data analysis and publication of results.

A FINAL WORD

Your co-operation and participation in the study will be greatly appreciated. Please sign the informed consent (DS-1) if you agree to partake in the study. In such a case, you will receive a copy of the signed informed consent from the researcher.

DESIREE SMAL

INFORMED CONSENT

Company

I hereby confirm that I have been adequately informed by the researcher about the nature, conduct, benefits and risks of the study. I have also received, read and understood the above written information. I am aware that the results of the study, including sensitive details will be anonymously processed into a research report or other research outputs. I understand that the participation of my company is voluntary and, at any stage, without prejudice, I may withdraw my consent and participation in the study. I had sufficient opportunity to ask questions and of my own free will declare the company prepared to participate in the study.

Research participant's details

Name of the company		
Business Address		
Contact numbers	**Telephone**	
	Fax	
	Cell phone	
	E-mail	

I hereby agree to participate in the study (Please answer yes/no)	
I hereby consent to the following employees being interviewed openly and freely for the study. Please supply the names and telephone contact number of the suggested employees.	
Name of participant	**Contact number**
I hereby consent to the following documents to be reviewed for the study. Please supply the names of the documents and where/from whom they can be obtained.	
Name of document	**Obtained from**

I hereby consent to viewing collections that are in the public domain and were completed between January 2012 and November 2013 (Please answer yes/no)	
I hereby consent to the company name/label being used in the study (Please answer yes/no)	
Should you answer no, the following code will be used for all information related to your company/label.	

Name (owner/manager)	
Signature	
Date	

Name of researcher	Desiree Smal
Signature	
Date	

INFORMATION LEAFLET AND INFORMED CONSENT FOR INDIVIDUAL PARTICIPATION

PROJECT TITLE:

The role of environmental sustainability in a design-driven fashion industry: A South African case study.

Primary investigator: Ms Desiree Smal, MTech (Fashion)
Supervisor: Dr Ingrid Stevens, DTech, Department of Fine and Applied Art, Tshwane University of Technology, Pretoria
Co-supervisor: Prof Mugendi M'Rithaa, Department of Design, Cape Peninsula University of Technology, Cape Town.

Dear Research participant,

You are invited to participate in a research study that forms part of my DTech-studies. This information leaflet will help serve to elucidate the project and will ask you to formally agree to participation. Before you agree to take part, you should fully understand what is involved. You should not agree to take part unless you are completely satisfied with all aspects of the study.

WHAT IS THE STUDY ALL ABOUT?

> Do we build a product that is long lasting and durable that you never have to replace it? Or do we build products that disintegrate after a while so that there is no landfill? Or do we create a product that self-cleans itself, so that you preserve water resources? […] How do we solve the problem of sustainability without compromising the athlete's performance? Do we build products that can be totally recycled? How do you dismantle a product, do you make products with dissolvable thread?
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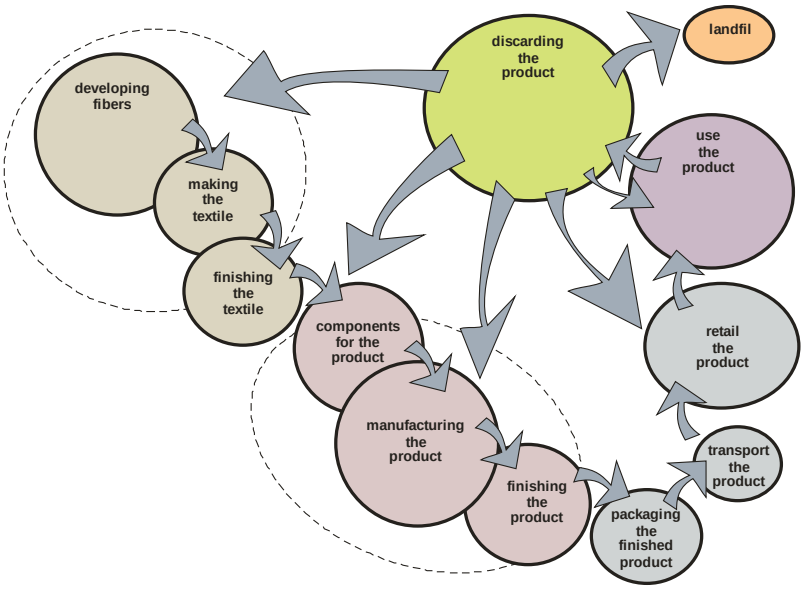

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WHAT WILL BE REQUIRED FROM YOU FOR THE STUDY?

The following permission is needed by you prior the interview:

1. Consent to participate in the study by means of an interview or interviews. All information will be treated as confidential and anonymity is guaranteed.

The following is required from you to enable to collect the necessary data:

1. I hope to be able to have only one interview per candidate, but might require additional interviews if required. A tape recorder will be used during the interviews and I will make field notes as we progress.
2. All interviews will be set on a date and time convenient to the candidate interviewed.
3. Permission to record all interviews. All recordings, transcripts and field notes will be kept in a safe by place for a period of five years.
4. Completion by you of the consent form DS-2.

WHAT ARE THE POTENTIAL BENEFITS THAT MAY COME FROM THE STUDY?

The benefits of participating in this study are that you will make a contribution towards design research and, due to the nature of my profession, fashion design education in South Africa.

WHAT ARE YOUR RIGHTS AS A PARTICIPANT IN THIS STUDY?

The participation in this study by you is entirely voluntary, and you have the right to withdraw at any stage. Should your company wish to withdraw, I would request to have the opportunity to have an exit interview.

HOW WILL CONFIDENTIALITY AND ANONYMITY BE ENSURED IN THE STUDY?

Confidentiality will be ensured in the following manner:

1. All the data that you provide during the study will be handled confidentially.
2. The owner /manager of the company has given permission for you to participate openly and freely and knows that your confidentiality will be guaranteed.
3. Your name will not be disclosed in the research findings, instead a code will be assigned to information obtained from you.
4. Transcript of the interviews will be made available to you to ensure that the information contained is true and correct.
5. This means that access to your data will be strictly limited to the researcher, the supervisors of the study and the designated examiners (appointed by Cape Peninsula University of Technology).
6. Your data and personal information will be kept and stored in a confidential format which will only be accessible to the researcher.

IS THE RESEARCHER QUALIFIED TO CARRY OUT THE STUDY?

The researcher is an adequately trained professional and researcher in the study field covered in this research project. In addition, the researcher has been in fashion design education for the past 25 years.

HAS THE STUDY RECEIVED ETHICAL APPROVAL?

The Faculty Research and Committee and the Research Ethics Committee of the Cape Peninsula University of Technology have approved the formal study proposal. All parts of the study will be conducted according to internationally accepted ethical principles.

WHO CAN YOU CONTACT FOR ADDITIONAL INFORMATION REGARDING THE STUDY?

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DECLARATION: CONFLICT OF INTEREST

There is no conflict of interest that may influence the study procedures, data collection, data analysis and publication of results.

A FINAL WORD

Your co-operation and participation in the study will be greatly appreciated. Please sign the underneath informed consent if you agree to partake in the study. In such a case, you will receive a copy of the signed informed consent from the researcher.

DESIREE SMAL

INFORMED CONSENT

Individual

I hereby confirm that I have been adequately informed by the researcher about the nature, conduct, benefits and risks of the study. I have also received, read and understood the above written information. I am aware that the results of the study, including personal details will be anonymously processed into a research report or other research outputs. I understand that my participation is voluntary and that I may, at any stage, without prejudice, I may withdraw my consent and participation in the study. I had sufficient opportunity to ask questions and of my own free will declare myself prepared to participate in the study.

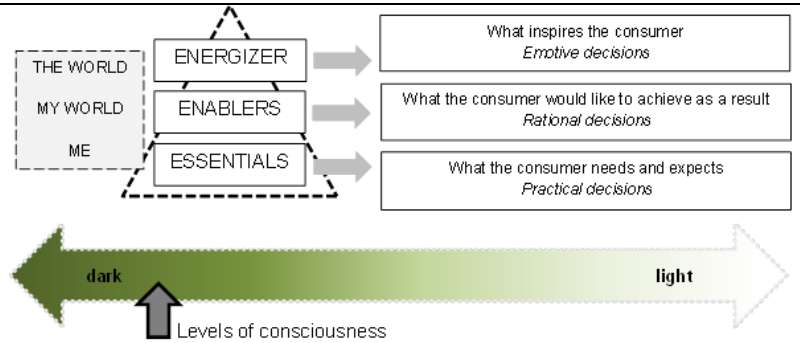
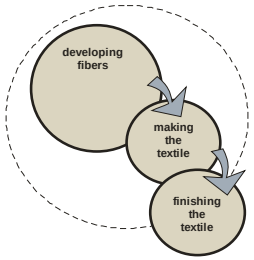
Name of the research participant (individual)	
Signature	
Date	
Participant code	

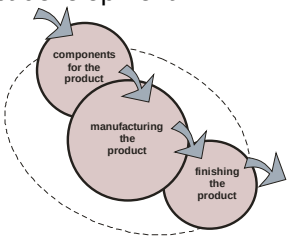
Name of researcher	Desiree Smal
Signature	
Date	

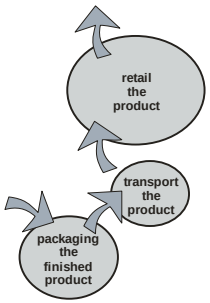
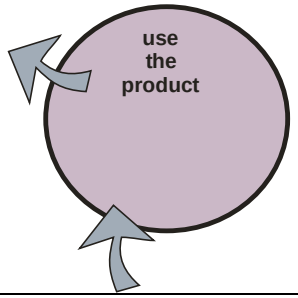
APPENDIX B

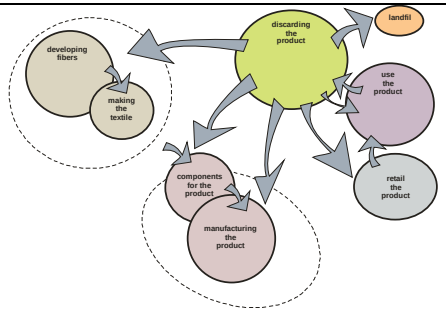
CONCEPTUAL FRAMEWORK: expanded

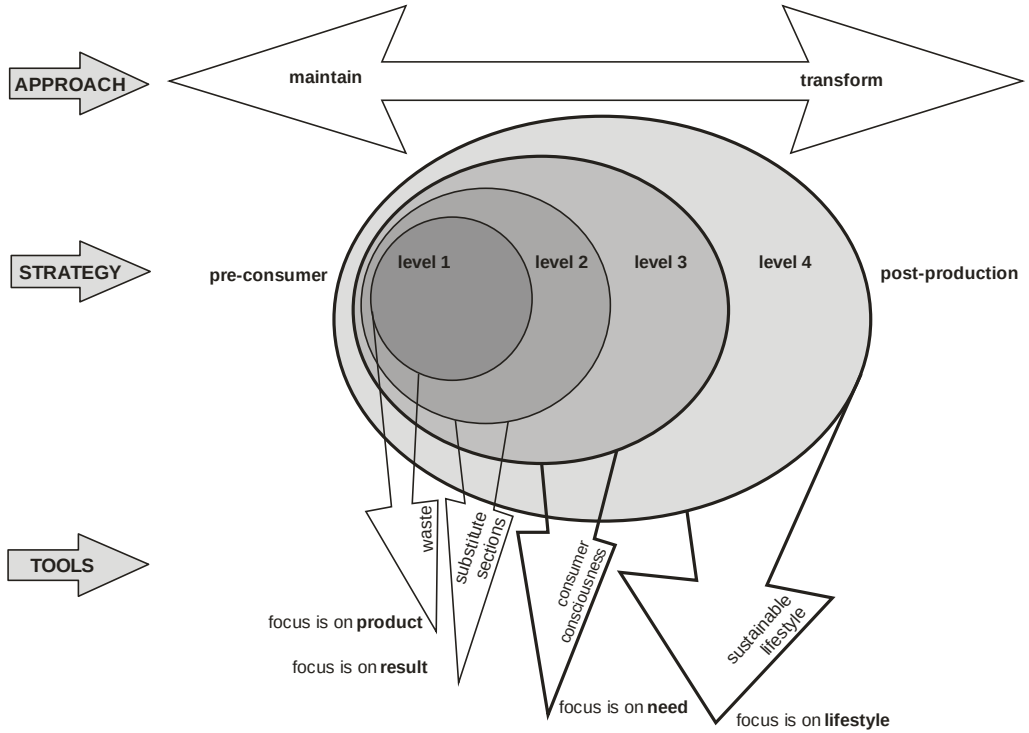
	General	Specifics	Aspects/elements
UNIT INFO	General information on size, structure and products of unit		Type of business
			Size of business
			Type of client
			Target market
			Range of products
			Extent of focus on eco-fashion
	Understanding the terminology		Define eco-fashion
			Define sustainable design
			Development in unit
UNDERESTANDING DESIGN ECO-PHILOSPHY	Environmental design praxis	Working from a broad knowledge base Can lead to inclusive decision making that can lead to sustainable solutions	Environmental philosophy regarding environmental sustainability in fashion
			Strategy for environmental sustainable fashion implementation in practices
			Design-making that holds value, asks of designers to consider insights generated by a wide range of perspectives and disciplines
			Material and immaterial decisions
		Capitals for change	**The usual 5:** Natural: use of resources, how to regulate, how to measure. Core of sustainability Human: physical, emotional, spiritual. Essential for a holistic view Social: Structures that aid individual development. Has considerable impact. Manufactured: Goods, infrastructure. Includes waste, disposal of waste and developing technology. Financial: Above four = financial power. Base of sustainability. **The needed 3:** Man-made goods: The stuff we produce from resources through the use of finances by people. This is where design influences sustainable production and consumption. Cultural: Embodied state, the objectified state and the institutionalised state. Influences design Symbolic: sociological state of the individual within the social group. Sustainability speaks to individual/collective values, thus design.

	The consumer In relation to design decision	The shades of greenness	
	Fashion design praxis	General comments	Transparency Establishing new partnerships between producers and consumers Implemented by people knowledgeable in the design and manufacturing field Design development Integrated approach Fashion, fashion designers key decision makers
UNDERSTANDING FASHION DESIGN PRAXIS		From fibre to textile 	<u>Fibre development:</u> Natural: vegetable, animal, mineral Manufactured: natural polymers, synthetic polymers Organic Renewability versus non-renewable virgin fibres Low impact versus high impact Biodegrading of fibres Designed into the product, proactive and eco-system inspired response to environmental sustainability People friendly fibres Taking the labour force into consideration during planting, growth, harvesting, manufacturing and finishing

			Low chemical use Specifically during development (for example, chemicals used in cotton) Low resource use Fibre selection and manufacturing processes, water and energy Predator friendly Taking the wider ecology into consideration <u>Textile development:</u> Use of bleaches and other cleaning possesses, expense of product versus cleaning of waste water chlorine based bleaches: essential step in preparing textiles for colouring, absorbed in water hydrogen peroxide: alternative to bleaching but uses higher temperature Use of enzymes as a catalyst for specific reactions, derived from genetic modification Colour Chemical colour, natural dyes, regional natural dyes Water use, water waste, fixation rate, waste-water cleaning Economic sustainability for high volume
		Product development  	Processes, components, production environment, labour Wise use of resources (natural and other) – minimise number of processing steps Reduce risk of pollution – minimize toxicity of chemical use, eliminate harmful processes Minimise resource consumption – combine processes, reduce temperature use, eliminate water intensive processes Reduce load on landfill – minimize waste at all stages Fast versus Slow Challenging existing flow of design-produce-consume Using localised labour markets Place greater focus on knowing and valuing the product Design that generates significant experience in the product as opposed to rapid consumption Focusing on local resources

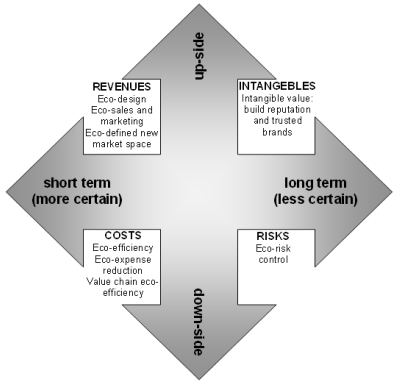
			Using production methods that are shaped by ecological limits Ethical fashion Ethical use of resources Good and fair working conditions Zero waste Design from a zero waste approach - what to do with the waste - no to have waste
		From factory to retail  	Methods of distribution, in general transportation 1% of carbon footprint Information on packaging Informing, communication to the consumer (tangible and intangible elements)
		Use of the product  	Consumer care Laundering and laundering techniques Energy consumptions in laundering 4x that of manufacturing Communication to consumer Change of habit
		Disposal of product	Recycling: extended producer responsibility, life-cycle thinking, chains of accountability Cyclical versus linear

			Pre-consumer, post-consumer Recycle: reactive approach (you work with what you get) Proactive approach (part of the design process, environmental sustainability is planned) Closed loop systems Disassembly: Recycle into another product (down-cycle) - shredding, chemical breakdown (blankets) C2CAD – disassemble entire product, Recycle into a similar product (up-cycle) Re-use (vintage, re-sell)
	Current status of the South African fashion industry	Other stories	
	Future of eco-fashion in South Africa		



Level 1 (tangible) **Approach:** focus is on waste	Based on traditional production-to-consumption cycles, specifically addressing waste	Elements of 're-': Re-cycle, re-use
		Using alternate energy
		Considering alternate disposal
		Considering alternate process
Level 2 (tangible) **Approach:** focus is on substituting parts	Life cycle assessment (LCA) Inventory analysis Impact analysis Improvement analysis	Materials
		Design
		Production
		Distribution
		Use
		Disposal

		Alternate components	Materials
			Design
			Production
			Distribution
			Use
			Disposal
		Alternate process	Materials
			Design
			Production
			Distribution
			Use
			Disposal
	Level 3 (tangible/in-tangible) **Approach:** lifestyle/consumer consciousness	Decisive variable in design	
		New ways of achieving consumer satisfaction	
		Minimising environmental impact through LCA	Environment
			Economic
			Consumer
	Level 4 (in-tangible) **Approach:** sustainable lifestyle	Design leads consuming(er)	
		Product/process/system	
		Well-being	Social
			Environmental
ECONOMIC VIABILITY	Balance: - nature, man, economy - nature, ethics , man	Environmental lens	Honest market system based on ecological truths
			How are the three domains addressed? Simultaneously – yes Individually – only temporary solution
			Approach to business practices are viewed through an environmental strategy (essential business strategy)
	Advantage/Disadvantage	Drivers of economically environmental sustainable fashion	Government
			Legislation
			Political security?
		Economic advantages Eco-advantages	Define sustainability strategically and economically

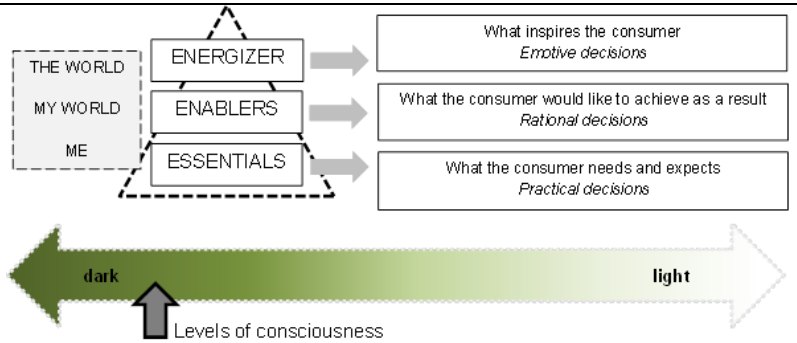
			The TINA approach Take ownership
			Doing the right thing, base environmental decisions on core values for short term and long term benefits
			Top to bottom, ensuring commitment
	Strategy  	Critical point of differentiation	Adopt a systems-wide view
			Holistic vision in own operations and stakeholders
			Understanding the challenges
			Form partnerships
			Apply to whole value chain
			Holistically integrate sustainability throughout the business Environmental consideration embedded in all aspects of operations.
			Transparency and accountability
	Building the up-side Short term (more certain)	Revenues	Design for consumer needs but also consumer environmental needs Lifecycle of product Cost comparative product
			Position the brands What you say, how you say, to whom you say
			Creating eco-define new market space Developing products within constraints
		Intangible values	Brand reputation Build, protect, transparency, building trust
	Managing the downside	Costs	Improving use of - Reducing – Cost effectiveness can lead to economic advantage
			Value chain - up-stream - down-stream
			Managing eco-expenses

			Control, reducing
		Risks	Manage environmentally driven risks Anticipatory issues management
	Auditing		
	Design praxis	Cradle-to-cradle approach Traditional priorities: reduce, reuse, recycle New priorities: re-design, re-imagine	
		Integrated approach	
		The importance of design Pivotal role of design	
		Design too specialised	
		Design not specialised enough Intellectual timidity	
		Traditional roles of design versus transformed roles of design	
	The designer	The 7 levels of expertise	
		The complexity of the design problem How the problem is framed	
		Creating their environment (meta activities) - how they approach a situation - role they take in the design problem - coalitions they develop - how they engage with stakeholders	
		Level of technical knowledge Active involvement	
		Design to take responsibility	
		Design-led innovation	
	Consumers	Making an informed choice	Knowing the facts
		Influence of advertising	Heavily influenced
		Choice editing	Right decision factored into the product Design for behavioural choice (making an informed choice) Could drive the buying decision

APPENDIX C

CONCEPTUAL FRAMEWORK: refined

VISION	Working from a broad knowledge base Can lead to inclusive decision making that can lead to sustainable solutions	Environmental philosophy regarding environmental sustainability in fashion
		Design making that holds value, asks of designers to consider insights generated by a wide range of perspectives and disciplines
	Capitals for change	Human: physical, emotional, spiritual. Essential for a holistic view
		Cultural: Embodied state, the objectified state and the institutionalised state. Influences design
		Symbolic: sociological state of the individual within the social group. Sustainability speaks to individual/collective values, thus design.
	Environmental lens	Honest market system based on ecological truths
		How are the three domains addressed? Simultaneously – yes Individually – only temporary solution
		Approach to business practices are viewed through an environmental strategy (essential business strategy)
	Economic advantages Eco-advantages	Define sustainability strategically and economically
	Critical point of differentiation	Holistically integrate sustainability throughout the business Environmental consideration embedded in all aspects of operations.
STRATEGY	Working from a broad knowledge base Can lead to inclusive decision making that can lead to sustainable solutions	Strategy for environmental sustainable fashion implementation in practices
		Material and immaterial decisions
	Capitals for change	Social: Structures that aid individual development. Has considerable impact.
		Financial: Above four = financial power. Base of sustainability.

	The shades of greenness	
	From fibre to textile	<u>Fibre development:</u> • Natural: vegetable, animal, mineral • Manufactured: natural polymers, synthetic polymers • Organic • Renewability versus non-renewable virgin fibres • Low impact versus high impact • Biodegrading of fibres • Designed into the product, proactive and eco-system inspired response to environmental sustainability • People friendly fibres • Taking the labour force into consideration during planting, growth, harvesting, manufacturing and finishing • Low chemical use • Specifically during development (for example, chemicals used in cotton) • Low resource use • Fibre selection and manufacturing processes, water and energy • Predator friendly • Taking the wider ecology into consideration
		<u>Textile development:</u> Cleaning processes: • Use of bleaches and other cleaning possesses, expense of product versus cleaning of waste water chlorine based bleaches: essential step in preparing textiles for colouring, absorbed in water hydrogen peroxide: alternative to bleaching but uses higher temperature • Use of enzymes as a catalyst for specific reactions, derived from genetic modification Colour: • Chemical colour, natural dyes, regional natural dyes • Water use, water waste, fixation rate, waste-water cleaning

		• Economic sustainability for high volume
	Product development	Processes, components, production environment, labour • Wise use of resources (natural and other) – minimise number of processing steps • Reduce risk of pollution – minimize toxicity of chemical use, eliminate harmful processes • Minimise resource consumption – combine processes, reduce temperature use, eliminate water intensive processes • Reduce load on landfill – minimize waste at all stages Fast versus Slow • Challenging existing flow of design-produce-consume • Using localised labour markets • Place greater focus on knowing and valuing the product • Design that generates significant experience in the product as opposed to rapid consumption • Focusing on local resources • Using production methods that are shaped by ecological limits Ethical fashion • Ethical use of resources • Good and fair working conditions Zero waste • Design from a zero waste approach - what to do with the waste - no to have waste
	From factory to retail	Methods of distribution, in general transportation 1% of carbon footprint Information on packaging Informing, communication to the consumer (tangible and intangible elements)
	Use of the product	Consumer care • Laundering and laundering techniques • Energy consumptions in laundering 4x that of manufacturing Communication to consumer Change of habit
	Disposal of product	Recycling: extended producer responsibility, life-cycle thinking, chains of accountability Cyclical versus linear Pre-consumer, post-consumer

		Recycle: • Reactive approach (you work with what you get) • Proactive approach (part of the design process, environmental sustainability is planned) Closed loop systems Disassembly: • Recycle into another product (down-cycle) - shredding, chemical breakdown (blankets) • C2CAD – disassemble entire product, • Recycle into a similar product (up-cycle) • Re-use (vintage, re-sell)
	Level 1	focus is on waste
	Level 2	focus is on substituting parts
	Level 3	lifestyle/consumer consciousness • New ways of achieving consumer satisfaction • Minimising environmental impact through LCA
	Level 4	sustainable lifestyle
	Environmental lens	Honest market system based on ecological truths
		How are the three domains addressed? Simultaneously – yes Individually – only temporary solution
		Approach to business practices are viewed through an environmental strategy (essential business strategy)
	Drivers of economically environmental sustainable fashion	
	Economic advantages Eco-advantages	Doing the right thing, base environmental decisions on core values for short term and long term benefits
		Top to bottom, ensuring commitment
	Critical point of differentiation	Understanding the challenges
		Transparency and accountability
	Revenues	Position the brand
		Creating eco-define new market space
	Intangible values	Brand reputation
	Costs	
	Capitals for change	Natural: use of resources, how to regulate, how to measure. Core of sustainability
		Manufactured: Goods, infrastructure.

		Includes waste, disposal of waste and developing technology.
		Man-made goods: The stuff we produce from resources through the use of finances by people. This is where design influences sustainable production and consumption.
	Fashion design praxis	Transparency
		Establishing new partnerships between producers and consumers
		Integrated approach
	From fibre to textile	<u>Textile development:</u> Cleaning processes: • Use of bleaches and other cleaning possesses, expense of product versus cleaning of waste water chlorine based bleaches: essential step in preparing textiles for colouring, absorbed in water hydrogen peroxide: alternative to bleaching but uses higher temperature • Use of enzymes as a catalyst for specific reactions, derived from genetic modification Colour: • Chemical colour, natural dyes, regional natural dyes • Water use, water waste, fixation rate, waste-water cleaning • Economic sustainability for high volume
	Product development	Processes, components, production environment, labour • Wise use of resources (natural and other) – minimise number of processing steps • Reduce risk of pollution – minimize toxicity of chemical use, eliminate harmful processes • Minimise resource consumption – combine processes, reduce temperature use, eliminate water intensive processes • Reduce load on landfill – minimize waste at all stages
SYSTEM		Zero waste • Design from a zero waste approach - what to do with the waste - not to have waste
	From factory to retail	Methods of distribution, in general transportation 1% of carbon footprint Information on packaging Informing, communication to the consumer (tangible and intangible elements)
	Use of the product	Consumer care • Laundering and laundering techniques • Energy consumptions in laundering 4x that of manufacturing Communication to consumer Change of habit
	Disposal of product	Recycling: extended producer responsibility, life-cycle thinking, chains of accountability

		Cyclical versus linear Recycle: • Reactive approach (you work with what you get) • Proactive approach (part of the design process, environmental sustainability is planned) Closed loop systems Disassembly: • Recycle into another product (down-cycle) - shredding, chemical breakdown (blankets) • C2CAD – disassemble entire product, • Recycle into a similar product (up-cycle) • Re-use (vintage, re-sell)
	focus is on waste Based on traditional production-to-consumption cycles, specifically addressing waste	Elements of 're-': Re-cycle, re-use
		Using alternate energy
		Considering alternate disposal
		Considering alternate process
	focus is on substituting parts	Life cycle assessment (LCA) Inventory analysis Impact analysis Improvement analysis
		Alternate components
		Alternate process
	sustainable lifestyle	Design leads consuming(er)
		Product/process/system
		Well-being
	Drivers of economically environmental sustainable fashion	Government
		Legislation
		Political security?

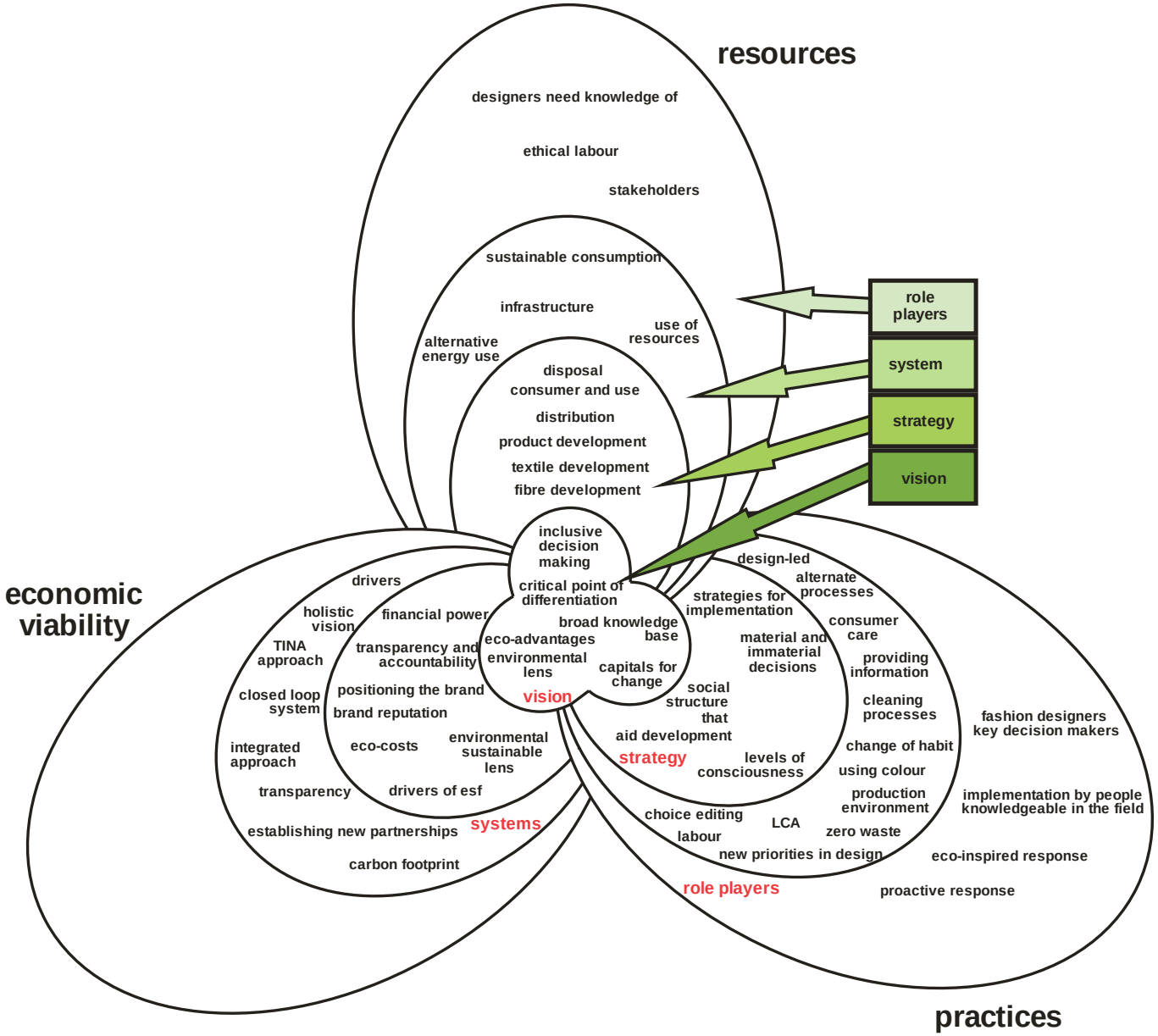
	Economic advantages Eco-advantages	Define sustainability strategically and economically
		The TINA approach Take ownership
		Doing the right thing, base environmental decisions on core values for short term and long term benefits
		Top to bottom, ensuring commitment
	Critical point of differentiation	Adopt a systems-wide view
		Holistic vision in own operations and stakeholders
		Form partnerships
		Apply to whole value chain
		Transparency and accountability
	Revenues	Lifecycle of product Cost comparative product
		Developing products within constraints
	Intangible values	Build, protect, transparency, building trust
	Costs	Cost effectiveness can lead to economic advantage
		Value chain - up-stream - down-stream
		Managing eco-expenses
		Manage environmentally driven risks
	Design praxis	Traditional priorities: reduce, reuse, recycle New priorities: re-design, re-imagine
		The importance of design Pivotal role of design Intellectual timidity
		The complexity of the design problem
	Consumers	Influence of advertising
		Choice editing Right decision factored into the product
	Capitals for change	Human: physical, emotional, spiritual.

		Man-made goods: The stuff we produce from resources through the use of finances by people. This is where design influences sustainable production and consumption.
		Cultural: Embodied state, the objectified state and the institutionalised state. Influences design
		Symbolic: sociological state of the individual within the social group. Sustainability speaks to individual/collective values, thus design.
	Fashion design praxis	Implemented by people knowledgeable in the design and manufacturing field
		Design development
		Fashion, fashion designers key decision makers
	From fibre to textile	Designed into the product, proactive and eco-system inspired response to environmental sustainability
	Product development	Processes, components, production environment, labour • Wise use of resources (natural and other) – minimise number of processing steps • Reduce risk of pollution – minimize toxicity of chemical use, eliminate harmful processes • Minimise resource consumption – combine processes, reduce temperature use, eliminate water intensive processes • Reduce load on landfill – minimize waste at all stages Fast versus Slow • Challenging existing flow of design-produce-consume • Using localised labour markets • Place greater focus on knowing and valuing the product • Design that generates significant experience in the product as opposed to rapid consumption • Focusing on local resources • Using production methods that are shaped by ecological limits Ethical fashion • Ethical use of resources • Good and fair working conditions Zero waste • Design from a zero waste approach - what to do with the waste - no to have waste

ROLE PLAYERS	Disposal of product	Pre-consumer, post-consumer
		Recycle: reactive approach (you work with what you get) Proactive approach (part of the design process, environmental sustainability is planned)
	focus is on substituting parts Life cycle assessment (LCA) Inventory analysis Impact analysis Improvement analysis	Materials
		Design
		Production
		Distribution
		Use
		Disposal
	Alternate components	Materials
		Design
		Production
		Distribution
		Use
		Disposal
	Alternate process	Materials
		Design
		Production
		Distribution
		Use
		Disposal
	lifestyle/consumer consciousness	Decisive variable in design
		Minimising environmental impact through LCA • Environment • Economic • Consumer
	Critical point of differentiation	Holistic vision in own operations and stakeholders
	Revenues	Design for consumer needs but also consumer environmental needs

APPENDIX D

CONCEPTUAL FRAMEWORK: interview guide


resources
designers need knowledge of
ethical labour
stakeholders
sustainable consumption
infrastructure
use of resources
alternative energy use
disposal
consumer and use
distribution
product development
textile development
fibre development
role players
system
strategy
vision
inclusive decision making
critical point of differentiation
broad knowledge base
eco-advantages
environmental lens
capitals for change
vision
economic viability
drivers
holistic vision
financial power
TINA approach
transparency and accountability
closed loop system
positioning the brand
brand reputation
integrated approach
eco-costs
environmental sustainable lens
transparency
drivers of esf
establishing new partnerships
systems
carbon footprint
design-led
alternate processes
strategies for implementation
consumer care
material and immaterial decisions
providing information
cleaning processes
social structure that
aid development
strategy
levels of consciousness
change of habit
using colour
production environment
choice editing
LCA
labour
zero waste
new priorities in design
role players
fashion designers key decision makers
implementation by people knowledgeable in the field
eco-inspired response
proactive response
practices

APPENDIX E

DATA COLLECTED

<table>
<tr><th>DATA COLLECTION METHOD</th><th>DATA OBTAINED</th></tr>
<tr><td colspan="2">SUB-UNIT 1</td></tr>
<tr><td>Semi-structured interviews</td><td>
<table>
<tr><td>Management 1</td><td>Participant 1</td></tr>
<tr><td>Management 2</td><td>Participant 2</td></tr>
<tr><td>Designer 1</td><td>Participant 3</td></tr>
<tr><td>Designer 2</td><td>Participant 4</td></tr>
</table>
</td></tr>
<tr><td>Supporting documents</td><td>
<table>
<tr><th>Name of document</th><th>Source</th><th>Assigned code</th></tr>
<tr><td>Global Organic Textile Standard (GOTS), version 4, March 2014</td><td rowspan="3">Global Organic Textile Standard International Working Group, Global standard website</td><td>Document 1</td></tr>
<tr><td>Manual for implementation of Global Organic Textile standard, March 2014</td><td>Document 2</td></tr>
<tr><td>Licensing and labelling guide, issue June of 2009</td><td>Document 3</td></tr>
<tr><td>Article in Entrepreneur magazine</td><td>Online</td><td>Document 4</td></tr>
<tr><td>Information on unit</td><td>Website</td><td>Document 5</td></tr>
<tr><td>Information on unit</td><td>Website</td><td>Document 6</td></tr>
<tr><td>Interview with CEO</td><td>Africa Business Journal</td><td>Document 7</td></tr>
<tr><td>Article on recognition of employees as brand ambassadors</td><td>WITS Business School</td><td>Document 8</td></tr>
</table>
</td></tr>
</table>

Supporting product

Rationale for product selection			
No of sites viewed • Sub-unit website			**x**
No of products viewed			**30**
No of products selected			**16**
Reason for selection Discussed during interview in December 2013 Is an indication of the type of company and supports the evidence of the interview data			
Description of product		**Source**	**Assigned code**
Boxy top	Ladies-wear label	Sub-unit's website	Product 1
Column shirt			Product 2
Classic Boot-leg bottom			Product 3
Drawstring pants			Product 4
A-line dress			Product 5
Cotton snood-dress			Product 6
Maxi dress			Product 7
Classic ¾ t-shirt			Product 8
Nautical stripes	Children's-wear label		Product 9
Preppy bows			Product 10
Preppy golfers			Product 11
Organic classic t-shirt (boys)			Product 12
Shell top			Product 13
Boys in blue			Product 14
Organic classic ¾ leggings			Product 15
Organic classic t-shirt (girls)			Product 16
Palm tree print			Product 17

<table>
<tr><th>DATA COLLECTION METHOD</th><th>DATA OBTAINED</th></tr>
<tr><td colspan="2">SUB-UNIT 2</td></tr>
<tr><td>Semi-structured interviews</td><td>
<table>
<tr><td>Management 3</td><td>Participant 5</td></tr>
<tr><td>Designer 3</td><td>Participant 6</td></tr>
</table>
</td></tr>
<tr><td>Supporting documents</td><td>
<table>
<tr><th>Name of document</th><th>Source</th><th>Assigned code</th></tr>
<tr><td>Hand written note on vision, strategy and systems</td><td>Provided by Participant 5</td><td>Document 9</td></tr>
<tr><td>Ecologist magazine, pg.3;29</td><td>Provided by Participant 5</td><td>Document 10</td></tr>
<tr><td>Information on vision</td><td>Company website</td><td>Document 11</td></tr>
<tr><td>Information House of Hemp</td><td>Company website</td><td>Document 12</td></tr>
<tr><td>Legalising hemp in the USA</td><td>Website</td><td>Document 13</td></tr>
<tr><td>YKK zips</td><td>Product information</td><td>Document 14</td></tr>
<tr><td>Estethica</td><td>British Fashion council website</td><td>Document 17</td></tr>
</table>
</td></tr>
<tr><td>Supporting product</td><td>
<table>
<tr><th colspan="3">Rationale for product selection</th></tr>
<tr><td colspan="2">No of sites viewed
• Sub-unit website
• Facebook
• Ecologist magazine</td><td>3</td></tr>
<tr><td colspan="2">No of products viewed
• Facebook postings
• Sub-unit website</td><td>32</td></tr>
<tr><td colspan="2">No of products selected</td><td>6</td></tr>
<tr><td colspan="3">Reason for selection
• Discussed during interview in November 2013
• Caption on Facebook indicate type of fabric used and where product is manufactured
• Is an indication of the type of company and supports the evidence of the interview data</td></tr>
<tr><th>Description of product</th><th>Source</th><th>Assigned code</th></tr>
<tr><td>Examples of product</td><td>Company website</td><td>Product 18</td></tr>
<tr><td>Bridal wear</td><td>Dress in Ecologist magazine
Pg. 29</td><td>Product 19</td></tr>
<tr><td>Dress made of Hemp</td><td>Image from Facebook</td><td>Product 20</td></tr>
<tr><td>Description of product</td><td>Images from Facebook
Daywear</td><td>Product 21</td></tr>
<tr><td>Description of product</td><td>Images from Facebook
Bridal wear</td><td>Product 22</td></tr>
<tr><td>Description of product</td><td>Images from Facebook
Lifestyle</td><td>Product 23</td></tr>
</table>
</td></tr>
</table>

<table>
<tr><th>DATA COLLECTION METHOD</th><th>DATA OBTAINED</th></tr>
<tr><td colspan="2">SUB-UNIT 3</td></tr>
<tr><td>Semi-structured interviews</td><td>
<table>
<tr><td>Management/Designer 4</td><td>Participant 7</td></tr>
</table>
</td></tr>
<tr><td>Supporting documents</td><td>
<table>
<tr><th>Name of document</th><th>Source</th><th>Assigned code</th></tr>
<tr><td>Information – SA Fashion Week website</td><td>Company website</td><td>Document 18</td></tr>
<tr><td>Youth Village interview</td><td>Youth Village website</td><td>Document 19</td></tr>
<tr><td>SA Fashion Week information</td><td>SAFW website[154]</td><td>Document 20</td></tr>
<tr><td>Article in Elle</td><td>Elle website</td><td>Document 21</td></tr>
<tr><td>Clothing with a conscience comes to Edgars</td><td>Brand Ambassadors website</td><td>Document 22</td></tr>
<tr><td>Climate change our wardrobe</td><td>Brand Ambassadors website</td><td>Document 23</td></tr>
<tr><td>Article on protest dress</td><td>Brand Ambassadors website</td><td>Document 24</td></tr>
<tr><td>Progress in the utilization and promotion of South African indigenous goats for cashmere production</td><td>Poster at the 8th International Goat Congress in Pretoria, South Africa, 2004</td><td>Document 25</td></tr>
<tr><td>Cashmere is King</td><td>Department of Science and Technology, Phase report, April 2005</td><td>Document 26</td></tr>
<tr><td>Boer goat project information</td><td>CSIR website</td><td>Document 27</td></tr>
<tr><td>Design Indaba</td><td>Design Indaba website</td><td>Document 28</td></tr>
<tr><td>Future Fabrics</td><td>Company website</td><td>Document 29</td></tr>
<tr><td>The eco-leather story</td><td>Product website</td><td>Document 30</td></tr>
<tr><td>PU</td><td>Website</td><td>Document 31</td></tr>
<tr><td>Article: The fibre, yarn and fabric properties for the cashmere component of South African indigenous goat hair</td><td>CSIR website</td><td>Document 32</td></tr>
</table>
</td></tr>
</table>

[154] SAFW is the official name of the South African Fashion Week, administered by Lucilla Booysens. SAFW is not the only presenter of fashion week events; another is Africa Fashion International (AFI).

Supporting product

Rationale for product selection		
No of sites viewed • Sun-unit website • Sub-unit on-line store • SAFW website		**3**
No of products viewed • Product from on-line store • Article found on unit website • SAFW collections: Winter 2014, Summer 2014, Winter 2015		**84**
No of products selected		**7**
Reason for selection • Some of the products were discussed and presented during the interview in October 2013. • Random selection of work from the SAFW collection • Is an indication of the type of company and supports the evidence of the interview data		
Description of product	**Source**	**Assigned code**
Fashion show image	Company website	Product 24
On-line store a) Sea urchin bracelet b) Love women's t-shirt c) Nation men's t-shirt	Company website	Product 25
SA Fashion Week images: Autumn/Winter 2015	SAFW website	Product 26
SA Fashion Week images: Spring/Summer 2014	SAFW website	Product 27
SA Fashion Week images: Winter 2014	SAFW website	Product 28

APPENDIX F

ALIGNING CODED DATA TO REFERENCES

Sub-unit 1

ASSIGNED CODE	TYPE OF DATA	ALIGNED CITATION
Participant 1	Unstructured interview	Participant 1, 2013
Participant 2	Unstructured interview	Participant 2, 2013
Participant 3	Unstructured interview	Participant 3, 2013
Participant 4	Unstructured interview	Participant 4, 2013
Document 1	Supporting document	Global Organic Textile Standard international working group, 2014(a)
Document 2	Supporting document	Global Organic Textile Standard international working group, 2014(b)
Document 3	Supporting document	Global Organic Textile Standard international working group, 2009
Document 4	Supporting document	Pitman, n.d.
Document 5	Supporting document	Earthaddict(a), n.d.
Document 6	Supporting document	Earthchild(a), n.d.
Document 8	Supporting document	Davies, 2012.
Product 5	Supporting product information	Earthaddict(b), n.d.
Product 6	Supporting product information	Earthaddict(c), n.d.
Product 12	Supporting product information	Earthchild(b), n.d.
Product 16	Supporting product information	Earthchild(c), n.d.
Product 29	Supporting product information	Earthaddict(d), n.d.

Sub unit 2

ASSIGNED CODE	TYPE OF DATA	ALIGNED CITATION
Participant 5	Unstructured interview	Participant 5, 2013
Participant 6	Unstructured interview	Participant 5, 2013
Document 9	Supporting document	Harris, 2013
Document 10	Supporting document	Ecofashion ideas factory, 2009
Document 11	Supporting document	Lunarlife(a), n.d.
Document 14	Supporting document	YKK social environment report, 2014
Product 18	Supporting product information	Arden, 2014
Product 21	Supporting product information	Lunar(d), n.d.
Product 22	Supporting product information	Lunar(a), n.d.

Product 23	Supporting product information	Lunar(b), n.d.
Product 30	Supporting product information	Lunar(c), n.d.

Sub-unit 3

ASSIGNED CODE	TYPE OF DATA	ALIGNED CITATION
Participant 7	Unstructured interview	Participant 7, 2013
Document 18	Supporting document	Fundudzi(a), n.d.
Document 19	Supporting document	Youthvillage, 2013
Document 20	Supporting document	Safashionweek(a), n.d.
Document 21	Supporting document	Fundudzi by Craig Jacobs at Edgars, n.d.
Document 22	Supporting document	Jacobs, 2012
Document 23	Supporting document	Jacobs, n.d
Document 24	Supporting document	Shaw, 2012
Document 25	Supporting document	Braun & Roux, 2004
Document 26	Supporting document	South Africa. Department of Science and Technology, 2005
Document 27	Supporting document	CSIR, n.d.
Document 32	Supporting document	Botha & Roux, n.d.
Product 25(a)	Supporting product information	Fundudzi(b), n.d.
Product 25(b)	Supporting product information	Fundudzi(c), n.d.
Product 25(c)	Supporting product information	Fundudzi(d), n.d.
Product 28(a)	Supporting product information	Safashionweek(b), n.d.
Product 28(b)	Supporting product information	Safashionweek(c), n.d.

APPENDIX G

TEMPLATE FOR ORGANISATION OF DATA

Section: Vision

	Interview guide	Refined D-D CF
1	Working from a broad knowledge base Can lead to inclusive decision making that can lead to sustainable solutions	**Environmental philosophy regarding environmental sustainability in fashion** Design making that holds value, asks of designers to consider insights generated by a wide range of perspectives and disciplines
2	**Critical point of differentiation**	Holistically integrate sustainability throughout the business Environmental consideration embedded in all [?] aspects of operations
3	Eco-advantages	**Define sustainability strategically and economically**
4	**Environmental lens**	Honest market system based on ecological truths (loaded statement) How are the three domains addressed? (nature, man, economy) Simultaneously – yes Individually – only temporary solution Approach to business practices are viewed through an environmental strategy (essential business strategy)
5	Capitals for change	Human What is needed for productive functioning and how it can be enhanced: Health/physical, knowledge/intellectual, psychological skills and dexterity. These include emotional and spiritual capabilities. Enhancement can be achieved for ex through education. For ESD – holistic view **Within the company**
		To the customer
		Cultural *Embodied state* – cultural (inherited/acquired set of properties) capital is held by the individual, part of human capital and verified by social capital. *Objectified state* – the goods we as individuals buy, these goods have financial and symbolic capital and are made from the man-made goods capital. *Institutionalised state* – recognises the cultural capital the individual has achieved (thought an academic qualification) in order to achieve, for example financial value. Individuals moving thought these various states decide what holds value and what not. Design integral to this
		Symbolic This recognises the sociological state of the individual within his/her social groups/units. Symbols confer meaning and value, and therefore status. These meanings/values that are held personally or collectively can change over time. Sustainable design speaks to individual and collective values. Sustainable consumption patterns can be influenced.

Section: Strategy

	Interview guide	Refined D-D CF
1	**Working from a broad knowledge base** Can lead to inclusive decision making that can lead to sustainable solutions	**Strategy for environmental sustainable fashion implementation in practices** (ST1) Material (MD) and immaterial (ID) decisions (ST2)
2	Capitals for change	Social: Structures that aid **individual development. Has considerable impact.** (ST3) Financial: Above four = financial power. Base of sustainability. (ST5)
3	The shades of greenness (towards the consumer)	**Level of consciousness** (ST4)
4	From fibre to textile **Product development** (ST15) **From Factory to retail** (ST14) **Use of product** (ST13) Disposal of product (ST12)	Fibre development (ST17) **Textile development** (ST16) **Processes, components, production environment,** labour Fast versus Slow **Ethical fashion** Zero waste Methods of distribution **Information on packaging** **Informing and communication to the consumer** Consumer use Recycling Cyclical / linear Recycle Closed loop systems disassembly
5	Which level on new design paradigm	Level 1 Level 2 Level 3 Level 4 Level 5
6	Environmental lens (ST10)	Honest market system based on ecological truths How are the three domains addressed? Simultaneously – yes Individually – only temporary solution Approach to business practices are viewed through an environmental strategy (essential business strategy)
7	**Drivers** of economically environmental sustainable fashion (ST11)	

8	**Economic advantages** **Eco-advantages** (ST5) **Critical point of differentiation** (ST8)	Doing the right thing, base environmental decisions on core values for short term and long term benefits Top to bottom, ensuring commitment Understanding the challenges Transparency and accountability
9	Revenues (ST7) Intangible values (ST8)	**Position the brand** **Creating eco-defined new market space** **Brand reputation**
10	**Costs** (ST5)	?

Section: Systems

	Interview guide	Refined D-D CF
1	Establishing new partnerships (SY15)	Transparency Integrated approach
2	Alternate process (SY2) Cleaning processes (SY5) Using colour (SY7) Zero waste (SY9) Production environment (SY8) Labour (SY13) Providing information (SY4)	Textile development Product development Processes, components, production environment, labour Zero waste Life cycle assessment (LCA) Inventory analysis, Impact analysis, Improvement analysis Alternate components, Alternate process
3		From factory to retail: **Methods of distribution, in general transportation Informing, communication to the consumer (tangible and intangible)**
4	Cleaning processes (SY5) Consumer care (SY3)	Use of the product: Consumer care • Laundering and laundering techniques • Energy consumptions in laundering 4x that of manufacturing Communication to consumer Change of habit
5	Providing information (SY4)	Disposal of product: Recycling Cyclical / linear Recycle Closed loop systems Disassembly
6	Alternate processes (SY2)	focus is on waste

	Change of habit (SY6)	Based on traditional production-to-**consumption cycles,** specifically addressing waste Elements of 're-': Using alternate energy Considering alternate disposal Considering alternate process
7	Alternate processes (SY2) Alternate energy use (SY22) Infrastructure (SY23) Use of resources (SY 25)	focus is on substituting parts Life cycle assessment (LCA) Inventory analysis Impact analysis Improvement analysis Alternate components Alternate process
8	Sustainable consumption (SY24) Design-led (SY1)	sustainable lifestyle Design leads consuming(er) Product/process/system Well-being
9	Drivers (SY21) TINA approach (SY19) Holistic vision (SY21) Transparency (SY16) Integrated approach (SY17)	Drivers of economically environmental sustainable fashion Government, Legislation, Political security Economic advantages Eco-advantages Define sustainability strategically and economically The TINA approach, Take ownership Doing the right thing, base environmental decisions on core values for short term and long term benefits Critical point of differentiation Holistic vision in own operations and stakeholders Form partnerships Apply to whole value chain Transparency and accountability
10	Holistic vision (SY21)	Revenues Lifecycle of product Cost comparative product **Developing products within constraints** **[What is positive and what is negative and what is both]** Intangible values
		Costs Cost effectiveness can lead to economic advantage **Value chain** **- up-stream (back)** **- in-stream (inside the buss)**

		- down-stream (forward) **[What opportunities]** Managing eco-expenses
11	Design-led (SY1)	Design praxis Traditional priorities: reduce, reuse, recycle New priorities: re-design, re-imagine The importance of design Pivotal role of design Intellectual timidity The complexity of the design problem
12	Choice editing (SY12)	Consumers Influence of advertising Choice editing Right decision factored into the product

Section: Role Players

	Interview guide	**Refined D-D CF**
1	Fashion designers key decision makers (RP1) Designers need knowledge of (RP5) Implementation by people knowledgeable in the field (RP2)	Fashion praxis – design
2	Ethical labour (RP6) Stakeholders (RP7) Eco-inspired response (RP3)	Fashion praxis – components Practices Ethical labour Critical point of differentiation
3	Proactive response (RP4)	

APPENDIX H

NUMBER OF ORGANISED, REFINED AND SUMMARISED DATA

	Interviews transcripts	Data organisation (Data alignment)	Data refinement	Summary of refinement[155]
Sub-unit 1	Participant 1	Vision	Vision	Summary vision Summary of strategy Summary of systems
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
	Participant 2	Vision	Vision	
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
	Participant 3	Vision	Vision	
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
	Participant 4	Vision	Vision	
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
Sub-unit 2	Participant 5	Vision	Vision	Summary vision Summary of strategy Summary of systems
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
	Participant 6	Vision	Vision	
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
Sub-unit 3	Participant 7	Vision	Vision	Summary vision Summary of strategy Summary of systems
		Strategy	Strategy	
		Systems	Systems	
		Role Players	Incorporated in above	
Total number of documents		**28 documents**	**21 Documents**	**9 Documents**

[155] Note: to the summary of findings includes supporting document data and support product data.