Promoting sustainability in Cape Town through embedding tacit knowledge in modern design

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Abstract

Design implies the conception and realisation of human needs and requirements through creative processes. Design is a social construct that is expressed through practice, in which designers act as agents of social change. Design for Sustainability (DfS) is a globally recognised way to improve efficiencies, product quality and market opportunities whilst simultaneously improving environmental performance. DfS does not necessarily require new technologies but rather, practical strategies that consider the society, environment and the economy. Integrating a tacit knowledge (TK) approach has been a strategy of choice employed by some product designers in Cape Town to address these diverse concerns. Consequently, tacit knowledge makes a significant contribution towards sustainability and has been embedded into production processes that foster social innovation. This is in line with DfS which includes the creation and appropriation of environmentally sensitive and responsible products as part of the evolving prevailing conditions of nature. This paper highlights some sustainable strategies that embed tacit knowledge in design so as to promote sustainability. Under the theme *designing sustainability* this paper further highlights some sustainable initiatives that are geared towards achieving sustainability and social change within Cape Town, South Africa. Key findings from this research suggest that we promote and give prominence to sustainable models that make tangible contributions towards sustainability.

KEYWORDS: Cape Town, Design for Sustainability (DfS), Designing Sustainability, Gross Geographic Product (GGP), Small, Micro, and Medium Enterprises (SMMEs), Tacit Knowledge (TK).

Introduction

The ever-increasing rate of urbanisation and industrialisation in South Africa is posing a challenge as this reality impacts on the quality of life for the urban poor from a developing world context (Sustainable Cities Report 2008, p.4). Cape Town faces socio-economic challenges such as unemployment, and there is an influx of people migrating from various parts of the continents as well as from rural areas of South Africa in search of better opportunities. This is not to suggest that designers are responsible for solving all the City's socio-economic problems, but rather, that they are an important constituency in proffering potential solutions.

Major contributors to Cape Town's Gross Geographic Product (GGP) are manufacturing industries which contribute 25%. 95% of some 64,000 formal businesses in Cape Town are small, micro, and medium enterprises (SMMEs), which significantly contribute 50% of total output and 40% of total employment. One of the top sectors in which SMMEs operate is manufacturing which makes up 11% of Cape Town's GGP. The design strategies that are featured in this paper fall under the above-mentioned SMME category (Laubscher, 2011).

Cape Town designers are becoming aware of design concepts such as Design for Sustainability, Design for Social Innovation, and Green Design. These initiatives are directly linked to socially responsible production. Cape Town has design initiatives which offer resilient solutions against the forces of rapid economic development that often threatens local cultures and traditions. Increasingly, designers are becoming aware of the gap in the provision of appropriate solutions and are coming up with context responsive strategies for meeting local demand and dealing with socio-economic issues without compromising on environmental concerns.

The strategies that designers devise vary in complexity depending on specific socio-economic problems being addresses. As the world grapples with the side-effects of globalisation, locally manufactured and environmentally conscious products are gaining popularity as they arguably offer consumers more meaningful alternatives to imported mass-customised products.

The acceleration of productivity led to constant rush and rampant competition to advance and develop new products and technology – this resulted in serious environmental problems. In 1972 the concept of eco-development was established in Stockholm during the UN environmental conference hosted there. Delegates at this pivotal conference agreed that sustainable development should supply basic needs of the current generations without jeopardising the potential livelihoods of future generations. This implies that logics of development should be subordinated to the principles of ethical modernity (Bartholo, Bursztyn & Leonardos, 2001).

In the 1990s the concept of eco-design and green design were introduced as strategies to reduce environmental impact associated with production processes (Clark, Kosoris, Hong & Crul, 2009). Eco-design involves both the aspect of economic development as well as that of environmental development as elements in the production of goods. Eco-design involves three pillars of sustainability: humans; the economy; and the environment and offers the advantage of focusing on the specific needs of the relevant communities in countries where designers are situated.

Design therefore implies the conception and realisation of human needs and requirements through context responsive creative processes. Design is a social construct that is expressed through practice, in which designers act as agents of social change (Manzini, 2008). Design for Sustainability (DfS) is a globally recognised way to improve efficiencies, product quality

and market opportunities while improving environmental performance. DfS addresses social, ethical, environmental and economic equity with respect to developmental and technological imperatives. Vezzoli (2007, p.39) defines DfS as "a design practice, education and research that, in one way or another, contributes to sustainable development".

Design for sustainability does not necessarily require new technologies but rather, strategies that take cognisance of social, environmental and economic concerns. Subsequently, integrating a tacit knowledge (TK) approach to such 'wicked' problems has resulted in novel solutions being proffered by collaborating designers in Cape Town. Tacit knowledge makes an important contribution to discourse on sustainability and has been embedded into production processes to facilitate social innovation. This is in line with DfS that includes the formation and apprehension of environmentally sensitive and responsible products as part of the evolving prevailing conditions of nature. This paper highlights strategies that embed tacit knowledge in design so as to achieve sustainability. Designers tackle various aspects of social problem in Cape Town through their design initiatives. This paper looks at three specific forms of design which contribute immensely to sustainability in Cape Town; those are in textiles, furniture design and jewellery design which will be discussed later.

2 Designing sustainability

Designing sustainability focuses on strategies that the design process will follow in order to achieve sustainability. It is the strategies that are used by various designers in context to the environment in which they produce products that use tacit knowledge which will be discussed in the following section. Three cases one in reference to textile recycling, one within the furniture design sector and lastly, a jewellery design company. The strategies focus on locally available materials, skills, knowledge and culture. Designers try to embody culture in the products they design by integrating culture to achieve affectivity in their products (Hall 1997; Du Gay, Hall, James, Mackay, & Negus 1997). The design objects carry knowledge that is not verbalised but forms part of the design process and based on experience which is why it is labelled as tacit knowledge. Designers in their quest for sustainability use this form of knowledge by embedding it into tangible objects without compromising the essential character of the design.

Design for sustainability contributes to 'low-tech' industries that add to knowledge formation; the said industries create employment and make a contribution on innovation that helps improve socio-economic issues through knowledge base development. Innovation in local knowledge-based industries is primarily based on utilising existing knowledge rather than creating completely new knowledge (Bender 2006; Goedhuys, Janz & Mohnen, 2008; Srholec, 2011). In recent years designers have become active promoters of social and economic solution to some of the problems faced by communities. Designers in Cape Town are actively re-orientating themselves towards becoming 'part of the solution' by being active agents in the transition towards more sustainable ways of living and being (Manzini, 2008). Notwithstanding, it must also be acknowledged that this proactive movement is still in its infancy in Cape Town and that a lot more still needs to be done.

3 Strategies for incorporating tacit knowledge into production processes

Cappello (1999, p.354) notes that knowledge-based economies include a process of cumulative knowledge taking place in firms where common and shared rules exist, which allows individuals to co-ordinate their actions in search for solutions to a particular problem. Tacit knowledge complements western knowledge by adapting elements of the different knowledge traditions and employs the same in a unique way for a particular production process thus resulting in knowledge based sustainable development. Creativity, intuition and innovation owe much to the ability to tap into the reservoir of tacit knowledge (Jarboe, 2001, p.8). Organisational and community-focused tacit knowledge is an important part of economic activity, particularly in industrially developing countries (or majority world contexts) while the combination of tacit knowledge and social capitals have become an important part of economic development.

The integration of tacit knowledge involves focusing on aesthetics, function, sustainability, as well as adherence to national and international standards, user requirements, and the appropriate choice of materials that are used in the production process. The city has been experiencing closure of landfills a feasibility study undertaken by the city of Cape Town and the National Cleaner Production Centre-Clothing component to assess the feasibility of recycling waste by repurposing off-cuts usually disposed in the landfills and identifying by-products that can be produced from waste. Designers have formulated various initiatives that deal with waste from the nascent clothing and textile sector (NCPC-SA, 2007).

3.1 Case 1: Textiles

The Western Cape provincial government plans to reduce waste due to the closure of three of the operational six landfills. Mielie handcrafted fun business took up the challenge and evolved a different strategy that deals not only with the environmental issue but also tackles socio-economic concerns. The Cape Town-based company empowers 25-30 men and women through creating crafted products using re-claimed materials with the aim of creating employment, restoring dignity and financial independence. The company has been in existence for more than 10 years, and the set up of the company is such that the crafters can work from home in order for them to spend time with their families. Once a week the crafters get together to collect the materials they require and to spend time together to share ideas and mutual concerns (see Figure 1).

The fabric of the Mielie range is from reclaimed sources, the finishes (cotton thread, needles, genuine leather and cane handles, see Figure 2) are locally produced which makes the production arguably more sustainable. The textile materials from which the bags are woven are by-products of cotton mills from Cape Town. The Mielie helps reduce the amount of fabric waste that is disposed in the landfills. The company is essentially dealing with waste that would otherwise end up in the landfills. The material is then converted into usable products, which in turn are sold to earn a living for the crafters and designers involved in the process.

The products are sold within the country and all over the world. The company also takes part in craft and design exhibitions that give it more exposure to the market and help increase the client base.

Figure 1: Mielie crafters sorting out the textile off cuts that will be used to weave bags Source: Mieile (2012)

The products vary because the materials are off-cuts and colours change every week. Seasonality impacts on what the mills produce at that particular time. These products are a true collaboration between a designer and crafters.

Figure 2: Mielie handcrafted different patterns and handles bags Source: Mielie (2012)

3.2 Case 2: Furniture design

Knowledge of one's materials and processes in the furniture design sector is a key factor in enabling designers to improve their products from an environmental perspective resulting in

ecological products. The small and micro furniture industry employs 49% of the work force in Cape Town (Laubscher, 2011). The largest share of the sector is in the upholstery, board and solid timber subsectors that constitute 88%; the remainder is in the bedding and office subsectors. Western Cape firms account for 20% of the national furniture industry. There are constant product and design changes and most furniture manufacturers have found a niche in the market (ibid).

The manufacturing sector is the traditional backbone of the Western Cape economy, taking up almost a quarter of its industries. The furniture making business is one of the industries where informal crafters can easily gain access to the economy through informal production and have the ability to upgrade without undermining sustainability. Furniture design in Cape Town is one of the industries focusing on the fresh vision and innovative ideas that make contextual reference to Cape Town and South Africa (Western Cape Furniture Initiative, 2011).

Designers Eve Collett and Henry du Rand started their enterprise Casamento five years ago – a furniture manufacturing business using natural and sustainable materials. The social role of the business is that it employs two people on a permanent basis, but also employs women on an *ad hoc* basis to embroider and hand stitch – this strategy contributes immensely towards keeping the traditional skills going. There are no school where the traditional skills that require time and patience could be learnt.

They upholster furniture using a combination of 20% latex foam and 80% raw recycled fibres such as wool, coir, and raw cotton (see Figure 3). The designers argue that using less foam result in an extended life span of resultant products. Foam disintegrates later on in life and turns into a fine toxic dust, and the manufacturing process releases harmful gasses to the environment. While latex foam comes from sap rubber trees; it is far superior to normal foam. All the above mentioned contribute to waste reduction as it reduces the amount of new materials being used in the production of furniture, thereby dealing with furniture that already exist which most people no longer have used for. The textile waste generated in the process of making the furniture is used to make floor cushions.

Figure 3: recycled stuffing used on the chairs Source: Casamento (2012)

Techniques such as needlework using a combination of rough and neat stitches are employed (see Figure 4 and 5) shows a chair that is made out of a combination of soft and rough recycled natural materials, using rough, and soft stitching. The work integrates custom-built interpretations of patchwork, embroidery and needlework. The furniture also

includes pieces of furniture which would otherwise end up in landfills. The pieces are restored from old cast offs, and re-worked, re-upholstered and given a modern look.

Figure 4: Raw natural chair Source: Casamento (2012)

Figure 5: Black embroidered chair and footstool Source: Casamento (2012)

The local strategies usually incorporate cultural richness that could potentially inform future efforts for interrogating issues of sustainable design, production and consumption (M'Rithaa, 2009). Carlson and Richards (2011) suggests that knowledge culture like biological culture reach in nutrient and diversity. When the knowledge is used wisely it can contribute immensely to human development, environmental sustainability, economic development and innovation. Below (see Figure 6) is an example of how traditional everyday knowledge is applied in contemporary design. The hunter chair is made out of a combination of leather, lambskin, hand embroidered linen. The combination of materials known materials which everyone associates with makes the product uniquely local as hunters can have the by-products of the animals that are hunted for food into a practical trophy. The designers also incorporate poems about nature as part of their designs. The poem on the applied to the

surface of the Hunters chair (shown in Figure 6) is authored by Mary Oliver, and captures the essence of a night alone in the forest and the sensation of being overwhelmed by nature.

Figure 6: Hunters chair made out of various leather types Source: Casamento (2012)

Deploying tacit knowledge in design adds a certain depth to the end product. Such desirable features are closely tied to the sensory aspect and have an arguably higher information content of embedded knowledge with place-specificity – details that science often has difficulty capturing and describing (Brix, 2008). In the density of form and content a place of art and its place become crucial in design and the poetic point where designers strive for resonance and a truth that cannot be captured in any other mediums (ibid).

The companies have preferred suppliers whom they work with. They also take part in organic market exhibitions as well as craft and design exhibitions. Due to the time-consuming nature of the production process the final products tend to be expensive and therefore bought by a specific niche market.

3.3 Case 3: Jewellery design

Tacit knowledge plays an important role in the use of found materials. Frieda is a jewellery designer/gold smith based in Cape Town and produces jewellery combining found object and recycled silver. This practice posits itself in the cradle-to-cradle concept that suggests that intelligent design can eliminate waste (McDonought & Braungart, 2002). Incorporating found objects in design solutions presents an opportunity that is not available in traditional acts of design (Ford, 2010).

Frieda uses the old African tradition of integrating found objects and other material from the natural environment into her designs. The silver used in the jewellery is 97% recycled mainly from old jewellery. Elements of cradled to cradle can be seen in the inclusion of tacit knowledge to design interventions where reuse of materials that are found in the surrounding are used to create functional objects.

The social role of her business is that she contributes to the growth of the industry by taking students after they finished their formal training to gain practical experience. Her business has been in existence for 9years and is steadily growing economically She also started a

jewellery hobby school in 2006 that grew to the current size of 18 students. She also offers specialised short courses to students and the jewellery industry in Cape Town where she shares her knowledge and skills.

Figure 7: Shell silver and quartz necklace

Silver & pebble brooch

Figure 8: Nguni horn, silver & Smoky quartz Source bracelets: Frieda Luhl (2012)

Various sea-shells and ostrich egg shells, granite, beads, pebbles from Millerton beach in Cape Town, and cow horn from the indigenous Nguni cattle are amongst found objects that are used to make the jewellery (see Figure 7 and 8). The addition of found objects enhances the appreciation of the designs thus produced. This practice is innately more sustainable as it allows for self-expression. However, the production runs and processes are arguably more labour intensive – a fact that cannot be overstated. Most importantly, they are patently environmentally friendly.

4. Concluding remarks

This paper offers insight into strategies that designers in the city of Cape Town employ to contribute meaningfully to the various socio-economic issues that face the city as well as their efforts to integrate local knowledge thus adding meaning and value to the end products they create. Tacit knowledge complements Western formalised/empirical knowledge by adapting elements of the different knowledge and used in a unique way for a particular production process resulting in knowledge based sustainable development. In regard to the case of the mielie handcrafted fun the designer's role is to guide the crafters with regards to the product specifications and requirements. The designers discuss the artwork with the crafters and through a mutually enriching o-creative process they jointly negotiate the way forward. However, in terms of production output that is left to the crafters themselves. The designers contribute in the selection of materials for production as well help promote local material knowledge and skills that the crafters possess.

Environmental and socio-economic issues impact upon just about everyone. Viewed against the backdrop of the ever-increasing rates of urbanisation and industrialisation in South Africa, there is an urgent imperative to deploy diverse strategies such as low environmental material processing to create new products, and increase employment for local crafters to deal with myriad socio-economic issues. Such strategies are arguably more responsive to the diverse challenges facing the country such as surplus semi-skilled labour, pervasive poverty, unusually high unemployment rates, and pressing environmental and health concerns that are of the highest priority. Designers make a contribution to these myriad issues, with some choosing to deal with environmental concerns whilst others engage with health and socio-economic issues. They each make a contribution in their own unique way. The designer's role in this regard is to identify materials that have less environmental impact and combine pertinent strategies with local knowledge of jewellery making (as well as skills learnt in the formal education system) to produce high quality jewellery.

By applying the strategies, designers are helping reduce the negative environment impact of processing of new materials. The use of found objects resonates with the eco-design principles of cradle-to-cradle thinking – incorporating tacit knowledge greatly enhances the overall sustainability of such processes by emphasising the practice of reusing/repurposing objects and materials that are found in the surrounding to create functional objects. In so doing, resilience in the overall economy is bolstered by arguably more progressive socially conscious strategies that absorb and deploy the huge semi-skilled labour surplus that is characteristic of most industrially developing (or majority world) contexts in gainful employment.

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