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Moalosi, Richie and Popovic, Vesna and Hickling-Hudson, Anne R. (2007)  
Strategies for infusing cultural elements in product design. In Daniels, C., Eds.  
*Proceedings 5th International Design Education Forum of South Africa  
Conference - FLUX: Design Education in a Changing World.*

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## **FLUX: Design Education in a Changing World**

### ***DEFSA International Design Education Conference 2007***

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# Strategies for infusing cultural elements in product design

## Abstract

*There is little in-depth research that can assist designers to use culture as a catalyst for designing innovative products within Botswana's context. This is supported by evidence from the literature which indicate that from an African perspective, there is no solid theoretical framework which can assist designers to consciously integrate users culture in designing products. This challenges designers to gain a deeper understanding of users culture and find strategies on how they can use culture as a resource in product development. The concept of culture and design are intertwined, thus modification in the former evolution both reflect and determine developments in the latter. For example, design changes culture and at the same time is shaped by it. The paper discusses an experimental design study conducted at the University of Botswana. Participants were challenged to transform a set of socio-cultural factors and encode them into recognised product design features that reflect Botswana's culture. The data generated by participants was analysed using the qualitative content analysis methodology. The paper concludes by discussing a culture-oriented design model which has shown one way on how to consciously specify, analyse and integrate socio-cultural factors in the early stages of the design process. The design model challenges the way products are designed for different cultures and supports the use of local content in solving design problems.*

*Keywords: Culture, socio-cultural factors, product design, culture-orientated design model, Botswana.*

## 1.0 Introduction

There is a lack of in-depth research and appropriate methods to assist designers on how culture can be consciously integrated in product design (Onibere et al., 2001; Hugo, 2002; Kotro & Pantzar, 2002 and Aykin, 2005). The current design approaches with their standards, rules and guidelines fall short with respect to issues relating to the cultural context. There is no solid theoretical framework linking design and culture (Saha, 1998 and Kersten et al., 2000). Such a framework is required and needs to go beyond the consideration of the surface manifestations of culture that have been widely accepted in design methodologies and it must address how the core components of culture can be embedded in designing products. This challenges designers to gain a deeper understanding of users' culture but embodying of cultural factors in new products development is not a straight forward subject and it is still an under-researched area (Taylor et al., 1999). However, Lee (2004) observes that in the design field, major topics in cultural design are still only limited to identifying aesthetic stereotypes such as the national shape or colour. These manifestations show that there isn't a well defined framework from an African perspective that can assist designers to respond to many unanswered questions and problems with regard to the integration of culture in design. Therefore, the paper aims at investigating how culture can be integrated in designing products.

## 2.0 Culture

Culture is a dynamic body of value systems that is altered by social change. It is dialectic and incorporates new forms and meanings while changing or reshaping traditional ones. Thus, it is conceived as a coherent body of beliefs and practices which are dynamic and changing within particular historical periods. Culture consists of multi-layers. Stephan (2004) suggests two layers (visible and invisible), Schein (1999) and Lee (2004) proposes three levels (basic assumptions, values and artefacts), Hampden-Turner and Trompenaars (1997) and Spencer-Oatey (2000) advocate four layers: (i) basic assumptions and values (ii) beliefs, attitudes and conventions (iii) systems and institutions (iv) artefacts, products, rituals and behaviour.

However, it is hard to draw a precise line between the notions of 'basic assumptions and values' (Spencer-Oatey, 2000). Spencer-Oatey cultural model combined the two because they form the inner core layer of culture. 'Basic assumptions' are deeply held by the society but unconscious and invisible core beliefs that inform the other layers whilst 'values' involve observable culture that the society claims to hold. This level introduces a useful distinction between values and their expression in a more precise, but non-implemented level. Group members are unlikely to share identical sets of 'beliefs, attitudes and conventions' which make up the second inner layer. The previous layer influences the third layer consisting of 'systems and institutions.' Culture is associated with social groups and people are simultaneously members of a number of different groups and categories. This layer is encircled with a split outer layer of culture composed of 'artefacts and products' (non-behavioural items) and on the other side 'rituals and behaviour' (human behavioural pattern). Artefacts include the visible and

easily described elements of culture which has an immediate emotional impact (Schein, 1999). Designers tend to overlook incorporating the inner core layers of culture and design products that are mainly based on the outer layer (Lee, 2004). Therefore, this paper defines culture as a shared set of basic assumptions and values with the resultant behavioural norms, attitudes and beliefs which manifest themselves in systems and institutions as well as material and non-material elements.

Botswana's culture has been influenced by external forces such as colonialism, postcolonialism and globalisation thus making it a hybrid culture. For example, globalisation is an evolution which is systematically restructuring interaction among nations by breaking down barriers in the areas of culture, commerce, communication and several other fields of endeavour thus increasing the integration of world markets. It is argued that globalisation advocates for a free-market economy, liberal democracy, good governance, gender equality and environmental sustainability among other holistic values for the people of the global village, but the process of globalisation itself can often make such goals impossible. For example, it could be argued that globalisation strives for cultural compatibility and destroys its diversity in the process, by denying or ignoring cultural identity. Globalisation has made culture the most important asset to work with (Lee, 2004). As culture has become a critical issue, designers are no exception from this paradigm. After all, it is a designer's ultimate role that shapes users everyday culture by creating new products that respond to that culture.

### **3.0 Design and culture**

Early links between culture and design became apparent in the domain of social anthropology where civilisation was evaluated through the evolution of objects and it was traced through the cultural characteristics left on those objects. Culture generates diversity and it is naturally revealed in all human action such as the products people design. The relationship between design and culture has taken many twists and turns throughout the last centuries, as design is seen both as a mirror and an agent of change (Moalosi et al., 2005a). It is observed that modifications in the former's evolution both reflect and determine developments in the latter. Design changes culture and at the same time is shaped by it (Röse, 2004). For example, it is argued that cultural beliefs and social practices create and reinforce frames of meaning which determine ways of relating to a product. These cultural framings affect ways in which people use or do not use a particular product. It is culture that gives products meaning and provides the rituals within which artefacts are used and the values that are often reflected in their form and function (Press & Cooper, 2003).

It is underscored that designers need to recognise that people are cultural beings and the process of integrating cultural factors in their practice should be emphasised. Design is firmly embedded in user's culture: it does not take place in a cultural vacuum (Margolin, 2002). Users are not just physical and biological beings, but socio-cultural beings (Baxter, 1999). Baxter advances an argument that designers have not yet been able to consciously encode cultural phenomena to the same extent as physical and cognitive human factors due to inadequate research on the area. Each culture has evolved its own answers to its problems (Hofstede et al., 2002). The use of a society's cultural factors in design not only makes technologies more appropriate for their social context, but makes better use of culture itself as a resource for innovation (Moalosi et al., 2005a). It is acknowledged that consideration of cultural factors may pave the way to the diversification of design concepts and facilitate product innovation.

Product design is an agent of change and it is important for designers to know how they can either undermine or support the indigenous cultural systems of the society (Popovic, 2002). It is through artefacts that cultural values are communicated. Design is therefore, an important medium of communication which expresses the values of the system within which it functions. In addition, users are not only competent members within their own cultures but they are also interpreters of their own and other cultures. Therefore, designers interpret and transform their needs and wants into product features that will give them narratives as well as benefits. Popovic (2002) observes that the following criteria could be applied to assist designers in this transformation: (i) the interface and human interaction should support the user culture; (ii) the artefact form or shape should correspond to the culture and life cycle which conforms to the appropriate aesthetics; (iii) the artefact form or shape should convey humour or joy of that particular cultural set up; (iv) appropriate colours should be used to evoke desirable feelings within the same cultural context and; (v) flexibility and adaptability of interaction should be related to culture.

In the field of design, the idea of a neo-liberal form of globalisation should be strongly contested (ICSID, 2002). Globalisation is seen as a force that must be opposed because it results in unification of users' culture through standardisation of products. In reaction to globalisation, it is noted that an opposite trend is emerging within design, which promotes local identity and highlights cultural values and traditions. Therefore, globalisation has sparked off a new awareness of local identity. Designers are challenged to foster cultural diversity through localisation of products in the face of globalisation. Variations in terms of national culture remain strong and the process of globalisation is in fact imposed on users. This argument can be expanded by observing that as international contacts and exchanges increase, there is an outburst of attitudes of defence of national and regional identities, and manifestations of the fear of mixing of races, religions, customs and habits. It is apparent that contacts in some cases do not necessarily generate a cultural standardisation but rather they often provoke an exacerbation of differences.

Universality is a value that is reminiscent of the industrial era but no longer meaningful in a post-industrial world (Krippendorff, 2006). There are voices within design lamenting the loss of culture, traditions and ethnicity. For example, in a study conducted by Samsung Design, it reveals that "users around the world are no longer willing to simply settle for one-size-fits-all products with standardised designs" (Delaney et al., 2002:46). They argue that individual users are demanding a wide range of sizes, shapes, colours, materials and features and these have become important factors for creating successful products. That is, designers have to balance core shared values with local empowerment to best satisfy individual wants and needs. This means users are demanding that specific needs be satisfied with more localised solutions (Aula et al., 2003). Electrolux, Nokia and Whirlpool have started to show sensitivity to certain cultural specifics, demonstrating an understanding of the cultural diversity of their global users (Ono, 2002). It is posited that localisation of products must be viewed as a counter-balancing force for the maintenance and durability of national cultures facing globalisation as well as its potential capacity for holding, preserving and presenting cultural values to the respective product users. This can be translated as an act of globalisation starting to soften its approach towards the standardisation of products and services.

African traditions in handicraft designs, whether in leather, cloth, wood, ivory, gold or other materials, can be expected to flourish only if they inform the design of industrial products made in Africa. Africa must control her industrial productivity, only then can one insist that industrial goods produced in Africa reflect African taste and style (Chinweizu, 1975). The primary objective is to develop an understanding of users' values and behaviours that can be translated into viable, visual design, information architecture and design ideas. "Technology is not a good traveller unless it is cultural calibrated" (Kaplan, 2004: xiv). This means products need to take into consideration the technological, anthropological, aesthetic and socio-cultural factors of their intended users. This might enable designers to design products that fit the cultural context of their users. The meanings that products come to have should be constructed in the process of a dialogue between culture, design and users. Moreover, this integration might enable designers to design products with relevant design features that give users narratives and benefits.

Most of the current research on the relationship between design and culture is European, American and Asian based and there is relatively little in-depth research on Africa let alone Botswana. Botswana should recognise the rapid international developments in science and technology that are re-shaping the societies of the world (*A framework for a long term vision for Botswana 2016*, 1996). While much can be borrowed from other countries, Botswana (people of Botswana) will need to look within their own resources and culture to find the sources of innovation that will allow them to shape their own future. The country will need to harness all of its resources of social and cultural diversity to achieve this aim.

#### **4.0 Research method**

An experiment was conducted at the University of Botswana with twenty-three fourth year undergraduate design students. This approach suits this research because Botswana's socio-cultural factors must be interpreted from the perspective of the participants being studied. This helps to probe beneath the surface appearance and provides detailed information about how socio-cultural factors can be transformed into product design features. The process enables one to assess how different elements of a social system (values, norms, beliefs, behaviour) interconnect in designing products.

However, participants were introduced to the concept of consciously integrating culture in designing products. Participants were presented with a sample list of socio-cultural factors (Table 1) extracted by using the qualitative method of content analysis from Botswana's ancient folktales and other contemporary sources such as the *National Policy on Culture* and national reports on Botswana's culture (Moalosi et al., 2005b). This was done to identify and articulate traditional socio-cultural factors from folktales and contemporary factors from current sources. Traditional factors assist designers to draw on a foundation for extending to new experiences, since the past informs the present and the future. Traditional and contemporary socio-cultural factors were then blended and divided into material, social practices, emotional and technology/design factors (Table 1). Participants were presented with an open design brief which incorporated the factors in Table 1 and their challenge was to transform them into product design features that would reflect and acknowledge Botswana's culture. Nonetheless, participants were not only limited to use those socio-cultural factors provided by this method. It is important to note that the socio-cultural factors in Table 1 might be similar to any other culture but their interpretation within the local context differs. The difference stems from portraying local identities. For example, in Botswana water is a valuable resource to locals because of the semi-arid climatically conditions of the country and it needs to be conserved whilst in other countries it might be of little value.

**Table 1: Sample Botswana's socio-cultural factors**

<b>MATERIAL FACTORS</b>	<b>SOCIAL PRACTICES</b>	<b>EMOTIONAL FACTORS</b>	<b>TECHNOLOGY/ DESIGN FACTORS</b>
Arts and crafts Baskets Cattle Indigenous materials Minerals Ornament Thumb piano Traditional chair Walking stick Water	Assistance Chieftaincy Exchange of gifts Music and dance Respect Sharing Sitting around the fire Sitting under a tree shade Social gathering Storytelling	Beauty Excitement Fear Friendliness Frustration Happiness Joy Kindness Love Satisfaction Stress Ugly	Computing Electronics Ergonomics Hydraulics Mechanisms Pneumatics Product quality Sustainability Technophobia

Data was collected using multiple instruments, comprising verbal (retrospective interviews), textual (reports) and visual (sketchbooks, design models and photographs).

## 5.0 Data analysis

Designers concentrate on functional attributes at the expense of non-physical factors (Margolin, 2002 and Lee, 2004). Contrary, Yang (2003) observes that design has upgraded from functional satisfaction to spiritual concern which is the fundamental factor of infusing culture in design. Users' interaction with products delivers various benefits at different levels rather than being restricted to functional and aesthetic attributes. It emerged during this phase that products offer the following properties: function, signification, gender, knowledge, aesthetics and mediation. The aim was to examine how each of the four socio-cultural factors (material, technology/design, social practices and emotional) were transformed into product attributes of function, mediation, knowledge, gender, signification and aesthetics to enhance users experience.

Participants used socio-cultural factors to draw on symbols, myths, images and rituals to create designs that are anchored in the local cultural context. However, participants were not only functionally or technologically driven but rather they generated user experiences. Contemporary design should not only involve technical standards and functional needs but it should convey the philosophy, ideology and complicated cultural phenomena of the society (Yang, 2003). Participants achieved this by starting with the life context of users that is their socio-cultural background. This included user's behaviour, patterns of living and working, shared culture, concerns, beliefs together with all other products responses to any design and the different ways in which user's may use or experience it. Designs conceived through this process, attract and hold user's interest as well as communicate the key attributes in a language users' can understand (Algotsson & Davis, 1996). Products are symbols, setting up positive frames of mind, reminding users of pleasant memories and act as expression of

user's identity (Norman, 2004). The designs convey a story, remembrance and something that ties users personally to them.

## **6.0 Culture-orientated design model**

In order to consciously integrate culture at a conceptual design stage, a culture-orientated design model is proposed (Figure 1). The design model has been developed after analysing the participants feedback to the research.

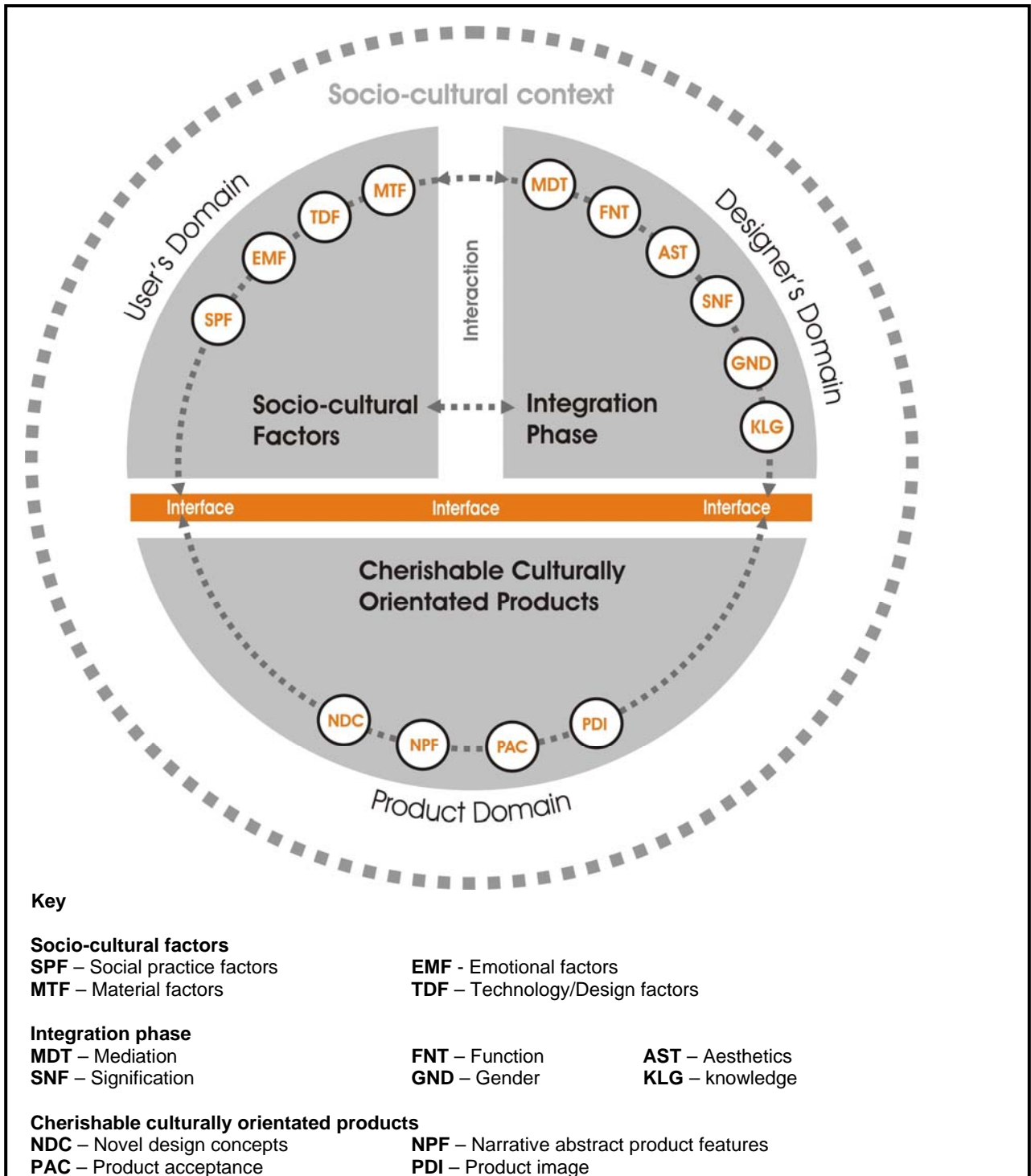


Figure 1 Culture-orientated design model

### 6.1 Socio-cultural factors

The first phase of the model (user domain) deals with the identification of the sources of socio-cultural factors and their categorisation. The sources include but are not limited to the following: folktales, oral traditions, songs, reports on culture, poetry, books and users. These sources cover the inner core layers of culture and thus basic assumptions, values, systems and institutions. The aim is to supply information to enlighten and shape design in subsequent stages. Socio-cultural factors were used as a way of uncovering or at least shedding light on users' social, emotional and aesthetic values and habits. User research needs to be conducted to assist in gathering and determining users requirements in terms of their cultural behaviour and attitudes. This process assists in creating



products that have a deeper local user experience. "User research has to be conducted iteratively throughout the design cycle to ensure a design that is easy to use, cultural-orientated and meets user requirements" (Chong, 2004:301). In this phase, participants used such data collection methods as interviews, focus groups and user observations to gather information about users. Feedback from users was incorporated at each phase of the model and this helped to ensure that the concept maintains a focus on real users' needs throughout the design process. However, Sametz & Mayhoney (2003) suggest that the involvement of users in the design process helps to capture their interest and needs at an early stage. This process builds trust between the designer and users.

Oral traditions (folktales) were categorised in terms of traditional socio-cultural factors while those from recent documents on culture were classified as contemporary (Figure 1). In analysing folktales Leedy & Ormrod (2001) underscore that traditional socio-cultural factors help people to understand what was previously observed and this provides a foundation for extending to new experiences. Categorising socio-cultural factors into traditional and contemporary has proved to be problematic because the categories were too broad and lacked focus. Therefore, both categories were combined and broken down into material, emotional, social practices and technology/design factors (Table 1). It emerged from the findings that traditional socio-cultural factors are important because some cultural practices which are valuable to the society are disappearing and they need to be revived and preserved. This model depicts the approach of bringing together traditional and contemporary areas of knowledge. The focus is on how the output can be practically linked and integrated successfully in a product design environment to stimulate creation of cultural-orientated novel concepts.

## **6.2 Integration phase**

This is the designers' domain because they need to interact with users to draw from their experiences and feedback in order to transform socio-cultural factors into culturally accepted product features. It is through different modes of social interactions that users explore the properties of products and socio-cultural factors can be transformed into functional features, signify, generate knowledge, mediate, reflect gender roles, and aesthetics features (Figure 1). A product will deliver more than one of the aforesaid properties at different levels to users. For example, if the product's outcome is to promote relationship among users, then more emphasis has to be paid to mediation. This approach ensures that designers remain truly focussed on the users' expectations. A focus on the sensations, feelings, aspiration and social relations that arise through users interactions with products inevitably strengthens the humanness in the design. The systematic integration of socio-cultural factors will not be complete without incorporating cognitive, physical and emotional human factors during this phase.

## **6.3 Cherishable culturally orientated products**

The last phase consists of the output that is cherishability in culturally orientated products (product domain - Figure 1). The focus of this model is to generate novel design concepts that are linked to users' needs as well as designing concepts with a recognisable product image embedded with intangible narratives that can facilitate users' product acceptance (Figure 1). A product should have a specific product image based upon symbolic personal and social values. It should project a slightly different metaphor and meaning on everyone who uses it. Its interface is essential to understanding the product. Products act as an expression of users' identity and aspirations. This could be achieved by using suitable colours, materials and shapes which portray users' identity. In summary, this model should provide tactile quality, symbolism and a story that gives products value and meaning. In this context, post-colonial designers should act as cultural builders as well as catalyst for change.

## **7.0 Discussions**

The main thrust of this study is an attempt at formulating a theoretical basis for the adoption of socio-cultural factors into the design process. This has been achieved by first developing a theoretical framework of cultural analysis and identifying relevant socio-cultural factors that impact upon design (Table 1). The aim was not to restore the bygone past, but to draw upon the past and create a new future in terms of designing cultural-innovative products. It is considered that in cultural relations, individuals and societies must search for the understanding of other cultures' experiences, assimilating and interpreting those that bring them benefit in terms of quality of life, but preserving their cultural heritages and identities. Furthermore, it is understood that the question of cultural diversity is not limited to relations between cultures of people and nations, but it is inside each society, the groups that constitute it, even in the core of each family, among its members. In Botswana's case, there are cultural, social, economic and educational dimensions amongst other aspects, which demand product

differentiation, in order to cater for symbolic, practical and technical requirements of the various social groups.

There is little in-depth research conducted on this topic except a few related studies which acknowledge the importance of culture to product design (Manzini & Susani, 1995; Gaver, 2001; Yang, 2003 and Norman, 2004). The study has attempted to raise pertinent issues facing product design in Botswana and other developing countries. Such issues to name but a few include lack of a concrete theoretical design and cultural framework for designers which has been taken for granted and this has resulted in emulating the Western design concept without much due regard to the local context. This approach develops knowledge and confidence to challenge the dominant Western culture in Botswana's design practice and advance local thought, content and solutions. It fosters an appreciation of the local culture in problem-solving. This is a way of decolonising design education from the current predominate Western values and recognising the indigenous voices in the formation of postcolonial culture. The study has shown one way on how to specify, analyse and integrate socio-cultural factors in the early stages of the design process (Figure 1). The culture-orientated design model is offered as a complimentary rather than an opposing view to existing design methodologies.

The critical challenge facing Botswana designers is not to be just aesthetic stylists or problem solvers but creators of cultural experiences that enrich the fundamental human experiences of being alive. It is through a better understanding of user's sensorial perceptions and cultural values that designers will be able to move into a new design paradigm of quality where products have added value, meeting user's true needs and making their experience more meaningful (Marzano, 2000).

## 8.0 Conclusions

The implications of this study is that culture-driven research provides new knowledge, ways of thinking and dealing with design issues and thus laying the groundwork for creativity and erecting the structure for product innovation. It ensures that design solutions matches users' needs, abilities and desires. However, products succeed only when they resonate with users' values, attitudes and behaviours, even if they result in changes to the same values and behaviours. This consideration should occur at the very early stages of conceptual development when the concept is still relatively fluid. Moreover, users should be directly and actively involved throughout the design life cycle. The input from socio-cultural factors is not sufficient enough to generate culturally innovative and acceptable solutions but one need to incorporate data from physical, cognitive and emotional human factors. The challenge for designers is to design products that users will actually want to keep, maintain and use for longer periods of time. Such products should be designed with empathy and created in an artful way engendering powerful emotional attachments, involving rich narratives and intense user experience. The model challenges the way products are designed for different cultures and supports the use of local content for design and development of new products.

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## **CURRICULUM VITAE**

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