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Socio-cultural factors that impact upon human-centred design in Botswana

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Abstract
This paper explores the relationship between culture and human-centred design in Botswana, a topic on which there is little previous research. The paper develops a framework of cultural analysis, comparing traditional with contemporary variables in order to develop a set of core variables that can be applicable to product design. Content analysis methodology was used to extract traditional variables from Botswana folktales, and qualitative data analysis methods were used to analyse contemporary variables. The results indicated that there is more emphasis on non-material than material variables. The paper concludes with a discussion of how to develop cultural strategies that will improve the potential of using human-centred design approach as the key to designing culturally sensitive products.

Keywords: Culture, Cultural variables, Human-centred design, Botswana

Introduction
Botswana is a landlocked country situated in Southern Africa with an area of about 581, 700 square kilometres. The population of 1.6 million practises a democratic system of multi-party politics. Botswana attained its independence in 1966 from Britain. Since then, the average Gross Domestic Product per capita annual growth has been 8 percent while the average per capita income is US$3600 (United Nations Development Programme – Human Development Report, 2003). This puts it in the category of middle-income developing countries.

Botswana's economy is heavily reliant on minerals. Diamonds generate much of the country's revenue as they contribute 45 percent to the Gross Domestic Product. Agriculture today provides livelihood for more than 78 percent of Batswana who live in semi urban and rural areas and their means of survival is farming and rearing of livestock. Cattle rearing is the most significant agricultural enterprise and according to the United Nations Botswana Statistics (2004), 51 percent of households own cattle. These facts are also underscored by the National Policy on Culture (2002) which points out that the rural Botswana mode of life is invariably tied to land, manifesting in agro-pastoralism. Beef exports to Europe contribute 5 percent to the Gross Domestic Product and it is the third

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largest income generator. Botswana is in the quest of diversifying its economy from over-reliance on diamonds. Tourism is seen as the next pillar of the economy as it contributes 15.9 percent to the Gross Domestic Product (Central Statistics Office, 2003).

Although the country is not poor in natural resources, the distribution of wealth is skewed towards the high social classes. Social classes include the wealthy, the middle classes and the poorer wage workers and subsistence groups, and the divisions of these class structures are reflected in differences in people's material culture throughout the country. The differences are based on income, occupation, education and access to social, economic and political power, factors which interact in complex ways to produce and reproduce societal segmentation. Social class groupings use different products in different ways. For example, the elite upper and middle classes use baskets as decorative ornaments while the low income classes use them for their intended purpose. Such differences have a bearing on design especially on how to design for these different social classes.

Bearing in mind this background, this research aims to investigate how socio-cultural factors impact upon human-centred design in Botswana. The research aims (i) to develop an approach to analysing a socio-cultural framework that accurately represents Botswana's culture and (ii) to develop a set of core variables applicable to making product design in Botswana more human-centred. Human-centred design is based on the premise that design is meaningful only when the focus of its activities and outcomes accommodate the largest possible number of people inclusive of their diversity. The approach goes beyond design's traditional focus on the physical and cognitive needs of users and encompasses cultural, social and emotional factors. Therefore, this paper has been based on this foundation in order to develop a Botswana's socio-cultural framework that will assist designers in designing culturally sensitive products.

Theoretical Approach
In order to establish socio-cultural factors, it is useful to draw on postcolonial theory which points to the importance of viewing Botswana's culture from two perspectives that is, pre-colonial and post-colonial culture. Post-colonial theory recognises the importance of exploring the interaction between the colonising, colonised and the decolonising cultures, and the tensions involved in the production of hybrid cultural identities. Botswana's culture has been shaped by colonialism and it has started to decolonise but the process has not yet gone very far. The country needs to decolonise its education, values, language, religion, technology and social organisation which were heavily influenced by colonialism. For example, in design education, Botswana needs a different approach to design from the current system that is so predominantly based on Western values that tends to be detached from the needs of some of Botswana's social groups. However, decolonisation is a continuous process even long after formal political independence is achieved. Bhabha (1994) pointed out that; decolonisation requires not the restoration of a historically continuous and

allegedly 'pure' pre-colonial heritage, but an imaginative creation of a new form of consciousness and way of life. Post-colonialism involves the idea of the coming together of two or more cultures as a result of colonialism and produces new different hybrid cultural identities characteristically distinct from the cultures that merged (Hall, 1996). In the process, old habits give way to new attitudes, values and modes of action. Botswana contemporary variables are a result of this hybridisation. Chinweizu (1975) emphasises that valuable continuities with our pre-colonial culture should be maintained, at the same time welcoming vitalising contributions from other cultures in making a healthy and unique synthesis from them all. The understanding of Botswana's socio-cultural framework developed in this paper will be based on this foundation outlined by Chinweizu.

Developing a Botswana socio-cultural framework
The aim of this research is to develop a socio-cultural framework that relates more adequately to the needs of Botswana contemporary product design than emulating Western design form and substance that does not reflect the culture and needs all people. The framework will be developed by analysing folktales to extract traditional variables and the analysis of contemporary variables.

Traditional socio-cultural variables
The first step was to extract traditional socio-cultural variables from Botswana folktales by using the content analysis methodology. It is hypothesised that they contain a rich data on socio-cultural variables. Folktales are one of the most ancient features of Botswana's culture and they have been vehicles of passing on the traditions and beliefs of the society from one generation to the other. Leedy and Ormrod (2001) observed that folktales helped people to understand what was previously observed or experienced and provided a base for extending to new experiences. Miller (2002) indicated that folktales have been used as a source of entertainment, to record the history of the people, and teach principles of life and morality; provide patterns of problem solving and give a sense of identity to the people. Tooze (1995) argues that folktales are not just for children but they are ageless since their messages are relevant across the spectrum.

Eight folktales were randomly selected for analysis and this size was found to be suitable because it is representative of different categories of folktales. Jason (1997) concurred that ten tales or 9 000 words seem to be a fair representation of a society's oral literature. In this case all the folktales amount to 10 272 words. The data analysis was divided into material and non-material socio-cultural variables. ATLAS.ti software was used in the coding and data analysis.
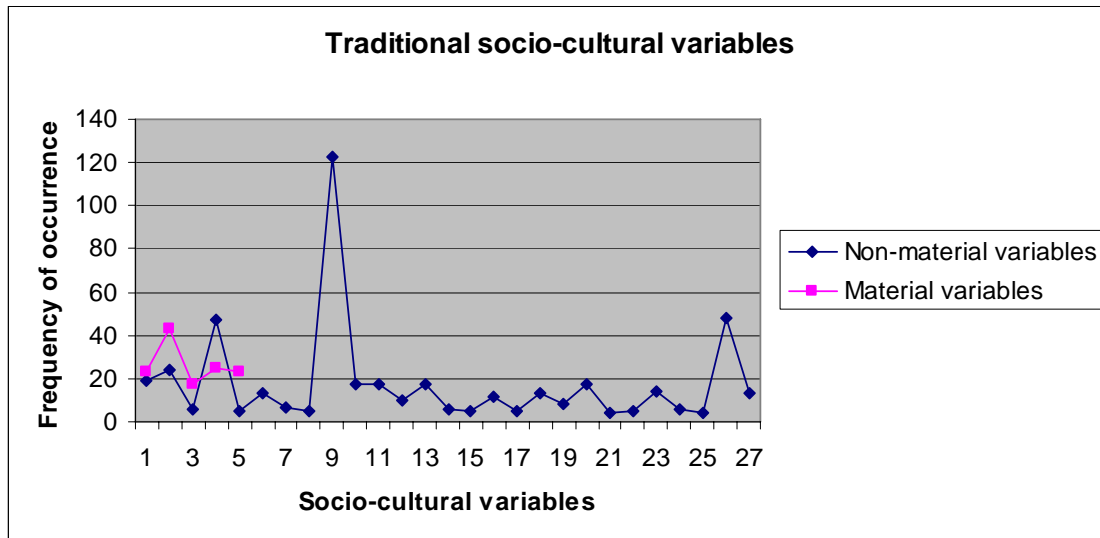
Key
Material variables
   1. Baskets   2. Owning cattle   3. Hut   4. Ornaments   5. Water

Non-material variables

1. Assistance	2. Beauty	3. Bridal party	4. Chieftaincy
5. Community spirit	6. Dancing	7. Exchange of gifts	8. Excitement
9. Family	10. Farming	11. Fishing	12. Friendliness
13. Happiness	14. Hunting	15. Joy	16. Kindness
17. Love	18. Marriage	19. Measurement of time	
20. Promise	21. Respect	22. Satisfaction	23. Singing
24. Sitting around the fire	25. Spirit people		26. Stories
27. Thanking			

Figure 1: Frequency rate of material and non-material variables from folktales

Figure 1 illustrates that there is more emphasis on non-material variables as represented by a ratio of 5:1. The highest frequency of occurrence is related to the family (19.7 percent). This indicates that the family variable is very significant to Botswana's society. The other variables can be built around this foundation such as exchange of gifts, marriage, love, assistance, bridal party, and sit around the fire and community spirit. They are family variables. The remaining variables can be grouped under the theme 'family pleasure' and these include excitement, joy, beauty, singing, dancing, happiness, thanking, satisfaction and kindness.

On the other hand, the material variables are few and they include baskets, cattle, hut, ornaments and water. The results indicate that traditionally, Batswana were not a materialistic society as the emphasis was more on non-material variables.

There is one feature which stands out on close analysis of these folktales and this is repetition. Repetition has both an aesthetic and utilitarian value; in other

words, it is a device that does not only give a touch of beauty or attractiveness to a piece of folktale but also serves certain practical purposes in the overall organisation of the oral performance. Okpewho (1992) argued that the repetition of a phrase, line or passage does have a certain sing-song quality to it; if the repetition occurs between intervals in a tale, the audience is often delighted to identify with and to accompany the performer in going over a passage that has now become familiar.

Besides the general aesthetic impact, repetition gives a certain amount of emphasis to a point that needs to be stressed. For example, the story of 'Ngoma's flying basket' strongly displayed this characteristic as illustrated below; the emphasis is on fishing and baskets.

"Oh, I shall surely die!
(She catches a fish and puts it in her basket)
Mother, you will never see me!
(She catches a fish and puts it in her basket)
And no one cares for me."
(She catches a fish and puts it in her basket)

Repetition in this folktale has been employed profusely to mark a feeling of agitation, in the sense of utmost deepest fear. In some cases, repetition can be used to mark feelings of excitement, satisfaction and delight to the audience. This can be achieved when the audience accompanies the performer in going over a familiar passage or song. In design, this can be done by inclusion of familiar features which users can identify easily.

The concept of repetition can be made applicable to product design. This could be achieved by repeating certain product features to convey, for example, a feeling of excitement, joy and satisfaction. The latter are some of the socio-cultural variables extracted from folktales. Therefore, repetition can be used as a tool for bringing pleasure. That is, it can be used to offer delight and relieves people of various pressures and tensions both physically and mentally.

Contemporary socio-cultural variables
It would be inappropriate to use only the findings from traditional variables to inform current practice in product design, as culture is dynamic. Therefore, contemporary variables were also explored based on available information. It is the synthesis of traditional and contemporary variables which facilitates the development of a set of appropriate variables that can be applicable to product design.

From extensive literature review of the National Policy on Culture (2002); Makwinja et al. (2000); Gasenone et al. (2000) and the long term vision of Botswana 2016 (1996), Botswana's contemporary variables are outlined in figure 2. Figure 2 is a comparison of traditional and contemporary variables. There are

similarities and differences between these variables. The common variables are taken to be the core variables that will be transferred and applied into product features.

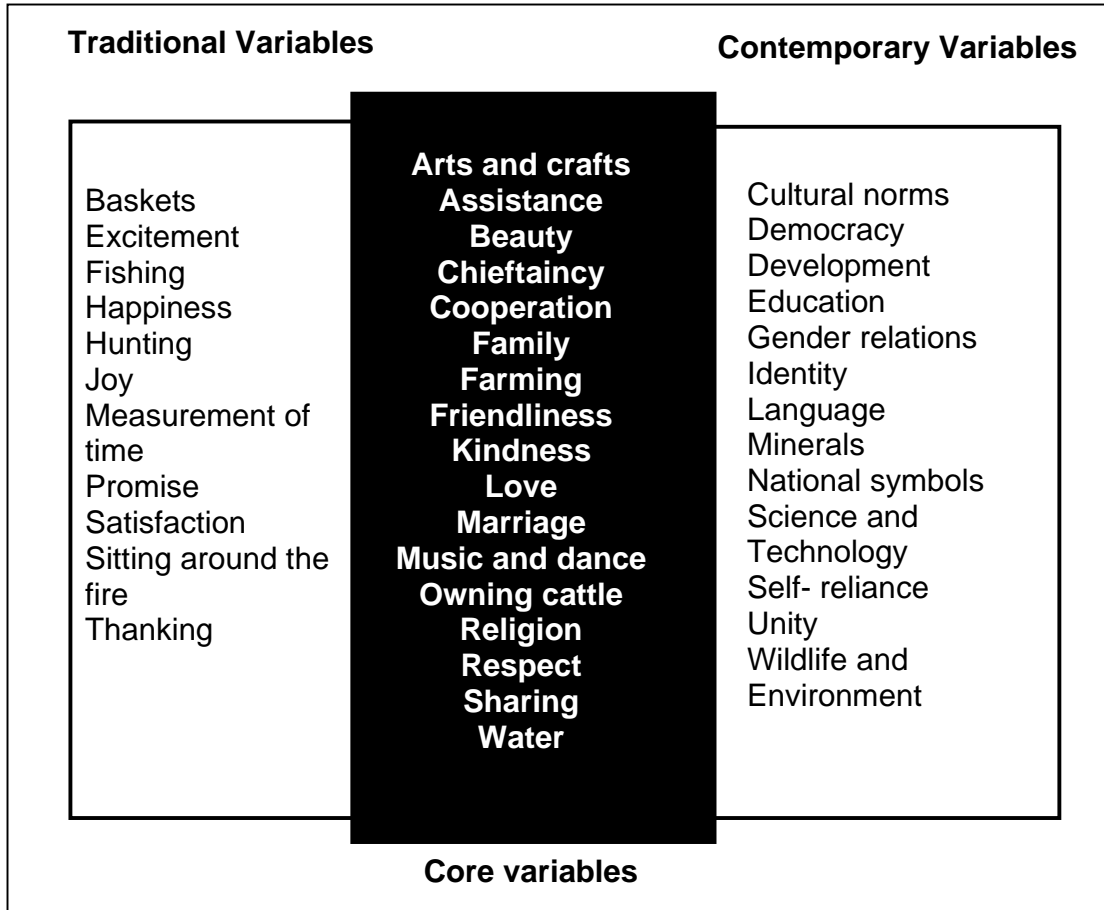| Traditional Variables	Core variables	Contemporary Variables
Baskets Excitement Fishing Happiness Hunting Joy Measurement of time Promise Satisfaction Sitting around the fire Thanking	**Arts and crafts** **Assistance** **Beauty** **Chieftaincy** **Cooperation** **Family** **Farming** **Friendliness** **Kindness** **Love** **Marriage** **Music and dance** **Owning cattle** **Religion** **Respect** **Sharing** **Water**	Cultural norms Democracy Development Education Gender relations Identity Language Minerals National symbols Science and Technology Self- reliance Unity Wildlife and Environment

Figure 2: Comparison of Botswana traditional and contemporary variables

Having analysed the contemporary and traditional variables, it is proposed that Botswana socio-cultural framework should include the factors illustrated in figure 3. The framework in figure 3 is a hybrid of the analysed Botswana's socio-cultural variables and the model developed by Gasenone et al., (2000). For this research, the focus is on values and technology. Designers will use contemporary technology to transfer and apply the core socio-cultural variables into product features that will reflect and acknowledge Botswana's culture. Bourdieu (1986) observed that designers have to embody culture in the products they design and they are the key cultural intermediaries.
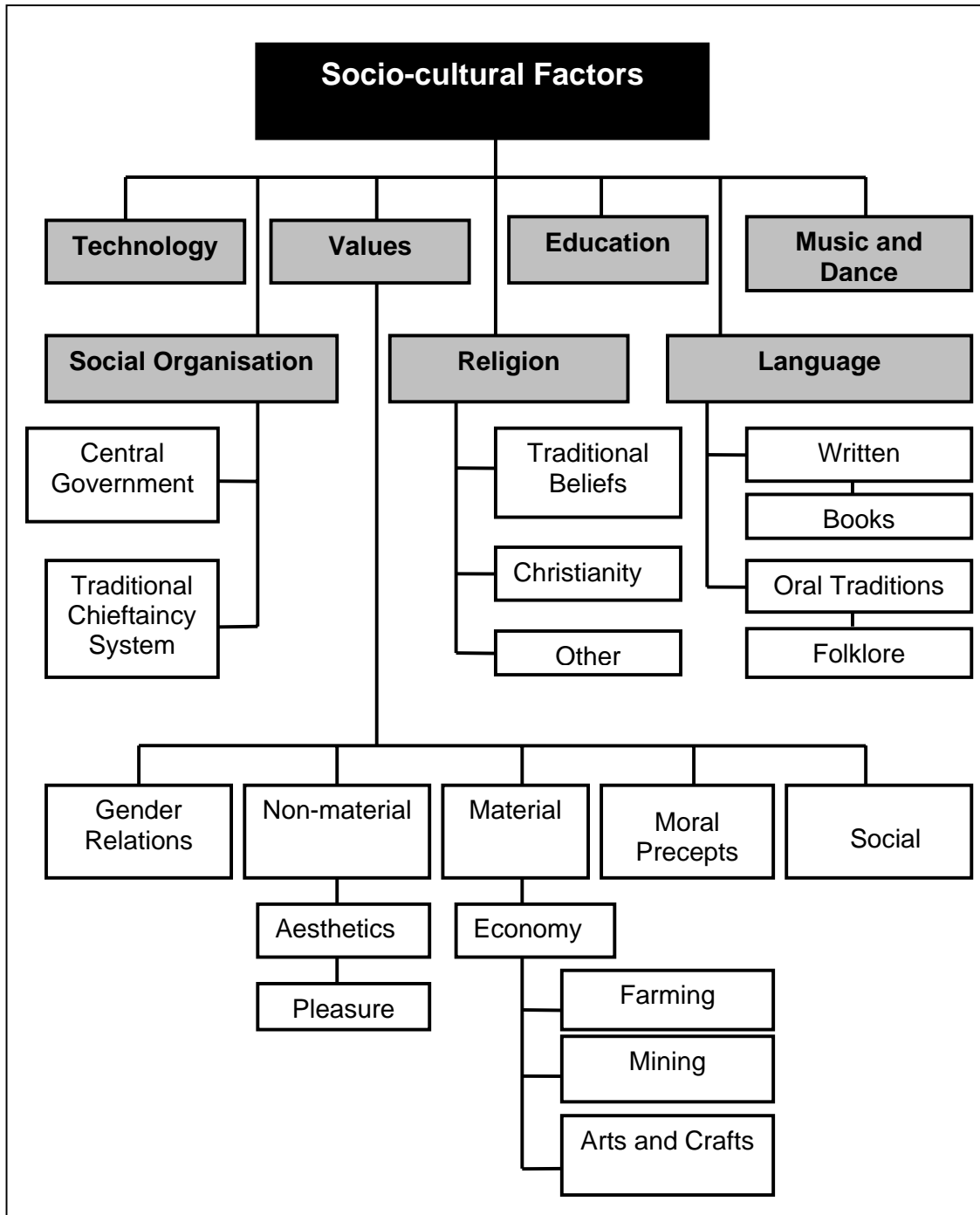
Figure 3: Botswana socio-cultural framework (after Gasenone et al., 2000)

It may be argued that product innovation targeted for the Botswana market should be conceived within this socio-cultural framework. This framework provides a guide to designers on how to design culturally sensitive products that will acknowledge Botswana's cultural diversity. For example, information on the

level of education of the users, their values, social class and gender are some of the vital data designers should know before designing for a particular market.

Core variables and their applicability to design
Using the framework in figure 3, this paper will now link how the core variables (figure 2) can be made applicable to product design. It is argued that any product design should take into consideration the different social class groupings found in Botswana. For example, what might be an essential product for a low income family may not be applicable to a high class family.

1. Family - The decision making in families is important to designers because this will determine whether the product's benefits should appeal to the family or individual. In a traditional Botswana set up, family decisions are predominately made by the male head of the family. This depends on the level of education of the woman, the more educated the woman, the more influence she will have in the family decision making process. On one hand, this value calls for designers to actively work with their users in this case the family. The family should be actively participate in the design process from an early stage when the design concept is still fluid. This approach gives designers an opportunity to learn about the family's customs, norms, behaviour, beliefs, desires, aesthetic preferences and cultural concerns. Therefore, the products designed through this approach would be truly human-centred.
2.
3. Water – Botswana is a semi-arid desert and water is very scarce. It is of paramount importance and it needs to be conserved. From the analysis, 3.5 percent of the results indicated how water is significant to Botswana's social life (figure 1). Designers have a role to design devices that can be used in conserving and recycling water.
4. Owning cattle and farming – As indicated in figure 1, 6.9 percent of the results acknowledged the significance of cattle to Botswana's culture. They are the pillar of the rural economy. Designers can evaluate and design new farming equipment which is suitable for farming in Botswana's semi-arid conditions. Cattle are important socially, culturally and economically to the lives of Batswana. According to the Central Statistics Office (2003), in 1999 there were 2, 581, 000 cattle as opposed to 1, 326, 796 people. The 2001 population census indicated that there are 1, 680, 863 people and yet every year close to 500 people perish due to road accidents. Out of this number, 10 percent are caused by cattle roaming on the local roads. There is a scope for design intervention in this area. Devices can be conceived and designed to help curb livestock accidents on Botswana roads.
5. The variable of sitting around the fire can be applicable to design if designers can assess and evaluate devices which are used during this activity. They can assess whether they are ergonomically, socially, emotionally, culturally and aesthetically satisfying people's needs. There might be a scope for product innovation.

6. The exchange of gifts variable can be linked to marriage and the family. Designers can assess what kind of artefacts families use and exchange as gifts. Designers can then add features to these artefacts which arouse excitement, joy, beauty, love, friendliness and satisfaction. One way of satisfying the mentioned variables will be to use the concept of repetition as it has been used in folktales for emphasis and to explain certain points. The repetition feature does not only provide emphasis but it has aesthetic and utilitarian values. If designed products bring pleasure, then when such products are exchanged as gifts they will fulfil the variables of satisfaction, happiness, kindness, joy, love, beauty and thanking.

7. Arts and crafts – in the analysed folktales, the kind of ornaments referred to in this category are beads, brass and copper bangles, animals and human figurines and ceramic products. These are represented by 4.0 percent (figure 1). The wooden animals carved by artists usually represent creatures found within that vicinity. There is a scope for product innovation in this sector and designers should make sure that these ornaments reflect the society's culture at the same time providing pleasure to people. Traditional baskets are a good example because their designs are representations of African patterns and motifs, animals and flora (Nkarabang and Sabone, 2001).

8. Beauty – 3.8 percent of results acknowledged the value of beauty (figure 1). Products which are regarded as beautiful happen to have the right answers to questions users might ask. Beauty in products can be achieved by the use of appropriate colour, shape, size, weight, texture and concinnity. Concinnity is an instance of elegance, harmony of style, neatness and symmetry. It is the skilful and harmonious unity, aesthetic beauty, and rational arrangement of a design. The logic of beauty requires that a design 'make sense' to its viewers and concinnity ensures that this objective is fulfilled.

9. Singing – some of the traditional musical instruments used to accompany songs are old and need to be upgraded in order to produce quality sound. One such example is the thumb piano.

10. Friendliness – This variable calls for designers to design user-friendly products and this can be achieved if users associate the products with their culture. This will fulfil other variables such as satisfaction, joy, happiness and excitement.

Conclusion

It has been demonstrated that Batswana place much emphasis on non-material variables. Most of these variables are built around the family and they are supposed to bring pleasure. Traditional variables (figure 1) provided a foundation for developing a comparison model with contemporary variables (figure 2). This comparison and synthesis became the basis for putting forward a Botswana socio-cultural framework (figure 3). This framework will ultimately assist designers in designing culturally sensitive products. The next level of this research is to formulate a design brief which will incorporate the core variables

and then presented to University of Botswana design students to transfer and apply them into product features that will bring family pleasure. The pinnacle of good product innovation is when it is built on sensitive cultural analysis and this fulfils the theme of design as cultural activity and design as cultural production.

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