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CULTURE-DRIVEN PRODUCT INNOVATION

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1. Introduction

The relationship between design and culture has taken many twists and turns throughout the last century, 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. For example, one could argue that cultural beliefs and social practices create and reinforce patterns and ways of relating to a product or frames of meaning. This cultural framing affects people's relative working, the way in which they interpret the product defines the way in which they use or not use that product.

However, cultural rights have been the focal point throughout the century. Designers should focus on cultural rights [Buchanan 2001]. The challenge for the future is to make culture the centrepiece of the world system, done in such a way that the world system is designed and developed in accordance with culture's highest, wisest and most enduring values rather than the basest and crudest practices. In product design, this can be achieved by incorporating the historical and aesthetic values of users. This challenges designers to understand what cultural norms and procedures need to be integrated in product design, and how they can be embedded in order to design innovative products [Moalosi et al 2005a]. Therefore, the paper aims at investigating how culture can be used to generate novel design concepts.

2. Design and Culture

It is observed that designers need to recognise that people are cultural beings and the process of integrating design and cultural factors in their practice should be emphasised. Design is firmly embedded in the 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 [De Souza & Dejean 1999]. There is an argument that designers have not yet been able to easily encode cultural phenomena to the same extent as physical and cognitive phenomena. The influence of culture on technological innovation and deployment in a country like Botswana is profound and complex. Innovation and creativity must be assimilated within the context of Botswana's own culture because creativity does not happen inside designer's heads, but in the interaction between a user's thoughts and a socio-cultural context [Csikszentmihalyi 1996]. Cultural factors in design do not only strive to make technologies more appropriate for their social context, but also to make better use of culture itself as a resource for innovation. One could argue that consideration of cultural factors might pave the way to the diversification of design concepts and this facilitates product innovation. Such product innovation will have been assimilated within the user's socio-cultural context and this might lead to product acceptance and users' satisfaction.

From the aforementioned facts, it can be deduced that designers who focus on the intelligence of their users rather than the intelligence of their technology will produce the innovations that really matter. Innovation starts with people, not with enabling technologies, and the designers' main role is to

mediate between technology and culture and to add ethics and aesthetics to technology [Szántó 2001]. In this case, designers are agents of cultural change. Product innovation brings drastic changes of social values, shocks of reorganisation and restructuring, the introduction of new socio-economic restraining mechanisms and excessive shifts in social conditions.
Cultural issues should be integrated in the teaching of science, design and technology. It is important for designers to know how they can easily undermine the indigenous cultural systems of the society. 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. Moreover, people are not only competent members within their own cultures but they are also interpreters of their own and other cultures. Therefore, designers should interpret and transform users needs and wants into product features which will give products narratives as well as benefits.
Most of the current research on the relationship between culture and design 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 design, science and technology that are re-shaping the societies of the world [Moalosi et al 2004]. While much can be borrowed from other countries, Botswana will need to look within her own resources and culture to find the sources of innovation that will allow her to shape her own future. In this case, the country will need to harness all of her social and cultural diversity.
Design and culture are inextricably intertwined and should be seen as complementing each other. The meanings that products come to have should be constructed in the process of dialogue between culture, design and users [Moalosi et al 2005a]. This might enable designers to design products that fit the cultural context of their users. This integration enables designers to design products with relevant design features that give users narratives, stories, and fantasies around them as well as benefits [Moalosi et al 2005a]. This might result in culture being used as a new dimension of product competitiveness and as a means of satisfying users' needs. Culture might be used as a tool for reflecting users' identities and as a counter balancing force against the neo-liberal form of globalisation which seeks to universalise users' cultures. The next section explores how designers integrated culture in designing innovative products.

3. Method

A teaching experiment was conducted at the University of Botswana with thirty-five fourth year undergraduate design students. This method suits this research because Botswana's socio-cultural factors must be interpreted from the perspective of the participants being studied as Bryman (2001) puts it that the researcher should 'see through the eyes of people being studied.' This helps to probe beneath the surface appearance and provides detailed information about how socio-cultural factors can be transformed into product 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. They were presented with the socio-cultural factors in Table 1 extracted by content analysis methodology 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 generate traditional socio-cultural factors from folktales and contemporary factors from current sources. Traditional factors help designers to understand what was previously observed and this provides a foundation for extending to new experiences. In other words, the past informs the present and the future hence the importance of traditional socio-cultural factors. 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 will reflect and acknowledge Botswana's culture.

4. Results and Discussion

This section investigates how socio-cultural factors (Table 1) were used to generate novel design concepts. These factors were incorporated at the early stages of the design process when the concepts were still relatively fluid. Dant (1999) framework on product properties was adapted. The incorporation of socio-cultural factors into product features was in the form of function, signification,

gender, knowledge, aesthetics and mediation. 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. However, [Du gay et al 2003] acknowledge that cultural factors have been insufficiently recognised in the public debate on how they can contribute to product innovation.

Table 1. Socio-cultural factors

Material Factors	Social Practices	Emotional Factors	Technology/Design Factors
Arts and crafts	Assistance	Beauty	Computing
Baskets	Chieftaincy	Excitement	Electronics
Cattle	Exchange of gifts	Friendliness	Ergonomics
Indigenous materials	Farming	Fun	Hydraulics
Minerals	Music and dance	Happiness	Mechanisms
Ornament	Respect	Joy	Pneumatics
Thumb piano	Self-reliance	Kindness	Product quality
Traditional chair	Sharing	Love	Sustainability
Walking stick	Sitting around the fire	Satisfaction	Technophobia
Water	Sitting under a tree shade	Thanking	
	Social gathering		
	Storytelling		

The analysis commences by considering how material factors were used to achieve design novelty. Participants merged two or more existing unrelated ideas to make a product that is unique from other artefacts. These participants expressed that (personal interviews conducted on April 19, 2005 at the University of Botswana);

> *I have merged these materials together and came up with a solid idea, thus a side lamp.*
>
> *I wanted to combine existing products and make a souvenir that does not exist.*
>
> *The use of indigenous materials and at the same time combining them to form a single product.*
>
> *The combination of three materials giving an indigenous organic design…*
>
> *I wanted to take two existing ideas and combine them and come up with a single product.*

Participants used the bisociative attraction technique in designing products. That is, the association of two known ideas which have not been connected previously, for example, connecting music to a traditional shield or canoe. This bisociation of two unrelated ideas collide in a way which jars or surprises users' normal powers of association and gives rise to humour and pleasure. The more unexpected the event is, the more intense will be the pleasure [Hassenzahl 2003]. The surprising association of a design concept drives the originality streak in a design. The more unexpected the result is, the more intense will be the pleasure. This kind of pleasure triggers positive emotional reactions. This has resulted in seminal innovation which establishes a new visual shape. This

technique was demonstrated further by the participant who designed a compact discs holder. A traditional drum shape has been used as the new form of the compact discs holder. A drum is a familiar product which is used when playing music and this participant has now linked it to a contemporary use such as storing compact discs. This kind of association of traditional and contemporary factors has created a product that has never before existed in society. This is an unusual "novel" solution as articulated as follows:

> *… I have turned a drum into a compact disc holder. Where have you seen a drum used in this way before?*
>
> *The incorporation of the horn to the bottle opener makes it unique from the existing openers.*

Participants were inspired by the use of indigenous materials to develop novel concepts. The following quotes support the use of indigenous materials in generating "novel design concepts."

> *The whole idea was sparked by the use of indigenous materials.*
>
> *The indigenous materials sparked this novelty.*
>
> *The shape and the use of indigenous materials…*
>
> *I decided to use local available material and come up with my own design style.*

Indigenous materials were used as a substitute for contemporary materials. Thereafter, the products shape was changed and the material substitution created products familiar to users and this evoked cultural connotations. Contemporary materials such as brass, glass reinforced plastics were also used in re-designing some products.

In addition, participants used a combination of the product's shape, form and finish to come up with "novel design concepts". For example;

> *I believe the shape, size; colours and even materials are novel.*
>
> *The shape and form (rose shell) are novel design features.*
>
> *The existing lamps are characterised by simple geometric shapes but this one was inspired by the flora of Botswana. This signifies a big departure from the norm. The social context can indeed inspire the generation of new design ideas.*

Participants changed the shapes and forms of products from the usual shapes to the unusual ones. For example, in the design of a thumb piano, "the shape resembles a canoe or shield found in the Okavango region." The new form is quite innovative from the original rectangular shape of a thumb piano. Participants concentrated on changing the shape of the products as expressed by;

> *…I just looked at things like carving, which was used by people when making products in the past. I also tried to change the original shape of the thumb piano.*
>
> *This clock's inspiration was sparked by a human face.*
>
> *The shape of a hut together with the fact that it incorporates a clock…*

These kinds of shapes and forms as expressed by this participant bring "something quite different for a change than something which is inspired by the Western culture." The shapes and forms of the new products resemble some products which are found within the society e.g. a clock which looks like a hut.
The social environment has played a major role in the inspiration of "novel design concepts." Participants looked back to nature to find stimulation. For example;

> *African design is inspired by the natural surrounding (eco-system) where it is conceived..*
>
> *Designers should consider their environment and culture when they design products for their users.*
>
> *The shape of the base was inspired by the stars and they represent certain mythical beliefs.*
>
> *This is a bed side lamp which has been inspired by a rose.*

Nature is a source of visual inspiration and it possesses a wealth of historical imagery. This kind of inspiration from nature is known as bionics. That is, the derivation of engineering and design principles employed in natural systems and the application of these principles to the design or improvement of material and technological systems. Participants borrowed some forms, shapes, colours and patterns from nature especially from the flora and fauna. Features from nature were used for design improvements. Visual and tactile cues emerged from landscapes, animals and vegetation. For example, human, animal figurines, huts, plants have been used as shapes and patterns in designing forms of new products. There are clocks which resemble the human face and hut, side lamps which look like roses. This kind of design inspired by nature;

> *…improves the quality and appearance of the product.*
>
> *…product becomes more human..*

It is worth noting that the majority of the design concepts were incremental innovations. This kind of innovation is characterised by the gradual improvement of a product through a series of product variants, such as the introduction of new elements or form. The designs were characterised by some changes in the development of an existing idea, such as changing the product form to a new shape. In other words, the current design's form is quite distinct from the existing ones. Therefore, the design ideas appear new, elegant, and different; have a distinct style and image and above all meet the user's needs, and expectations. The newness was not only on physical features but included non-physical features such as generation of new knowledge.

5. Conclusion

The approach used for this study gave insights into how Batswana (people of Botswana) live their lives, their everyday circumstances, their routines, rhythms and their practical concerns. In this context, socio-cultural factors were used as a way of uncovering or at least shedding light on users' social, emotional and aesthetic values and habits. At the same time, this approach enables designers to integrate culture by conscious design effort rather than by accident when designing products. These socio-cultural factors also provide an engaging and effective way to open up communication channels

and foster an ongoing dialogue with users by involving them in the early stages of the design process. Socio-cultural factors have enabled participants to overcome some of the distance that inevitably exists between designers and users and thereby gather a rich set of materials that grounds design in the lived realities and textures of everyday life. Therefore, designers have to treat the use of socio-cultural factors as the foundation or spring board for new design concepts. This will not only improve the function or appeal of the product but this will be grounding design in users' culture. Therefore, culture orientated innovation enables designers to see the world through the eyes of users. The pinnacle of good product innovation should be grounded on sensitive cultural analysis of users needs.

References

Bryman, A. "Social Research Methods," Oxford University Press, Oxford, 2001.

Buchanan, R. "Human Dignity and Human Rights: Thoughts on the Principles." Design Issues, Vol. 17, No.3., 2001, pp. 35-40.

Csikszentmihalyi, M. "Creativity: Flow and the Psychology of Discovering and Invention," Harper Collins, New York, 1996.

Dant, T. "Material Culture in the Social World," Open University Press, Buckingham, 1999.

De Souza, M. & Dejean, P. H. "Interculturality and Design: Is Culture a Block or Encouragement to Innovation?" Design Cultures – The International Conference of Design Research Proceedings, Sheffield Hallam University, UK, 1999, at http://www.shu.ac.uk/schools/cs/ead/work/desouz.pdf.

Du Gay, P., Hall, S., Janes, L., Mackay, H. & Negus, K. "Doing Cultural Studies – The Story of the Sony Walkman." SAGE Publications, London, 1997

Hassenzahl, M. "The Thing and I: Understanding the Relationship between User and Product" in Blythe, M. A., Overbeeke, K., Monk, F. A. & Wright, P. C. (Eds) Funology from Usability to Enjoyment, Kluwer Academic Publishers, London, 2003.

Margolin, V. "The Politics of the Artificial," University of Chicago Press, Chicago, 2002.

Moalosi, R., Popovic, V., Hudson, A. & Kumar, K. L. "Integration of Culture within Botswana Product Design," 2005 International Design Congress Proceedings, National Yunlin University of Science and Technology, Taiwan, 2005a.

Moalosi, R., Popovic, V. and Hudson, A. & Kumar K. L. "Product Analysis in Relation to the Socio-cultural Perspective of Botswana." Proceedings of the International Conference on Design Education: Tradition and Modernity, National Institute of Design - Ahmedabad, India, 2005b.

Moalosi, R., Popovic, V. and Hudson, A. "Socio-cultural Factors that Impact upon Human-centred Design in Botswana" in Redmond, J., Durling, D. and De Bono, A. (Eds). Futureground Conference Proceedings, Vol 2, Monash University, Melbourne, Australia, 2004, 162-172.

Szántó, B. "The paradigm of globalisation," Technovation, Vol. 21, 2001, pp. 673-687.

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