The Impact of Socio-cultural Factors upon Human-centred Design in Botswana

Richie Moalosi
BEd (DesTech) UB (Botswana)
MA (Des) UW (UK)

School of Design
Queensland University of Technology

Thesis submitted for:
Doctor of Philosophy (PhD)

2007
Dedication

For my mum, Lizzie, who passed away in May 2004; may her soul rest in peace.
Abstract

This thesis explores the relationship between culture and human-centred design in Botswana, a topic on which there is little previous research. The pinnacle of good product innovation is when it is grounded on sensitive cultural analysis of users’ culture; however, it has been observed that designers have not yet been able to encode cultural phenomena to the same extent as cognitive and physical human factors. The study develops a theoretical framework of cultural analysis, comparing traditional with contemporary socio-cultural factors that can be applied to designing products. The content analysis method was used to extract and synthesise traditional and contemporary socio-cultural factors from Botswana’s cultural sources. An experimental study was undertaken in Botswana to investigate how socio-cultural factors can be integrated in product design, and the participants’ challenge was to transfer and apply these into product features that reflect Botswana’s culture. This data was analysed using the qualitative method of textual and visual content analysis.

A culture-orientated design model has been proposed to assist designers to consciously integrate culture in their design practice. The framework demonstrates how to specify, analyse and integrate socio-cultural factors in the early stages of the design process by advancing local thought, content and solutions. It advances a new approach to design education, theory, research and practice. It emerged that culture can be used as a resource of information and a source of inspiration for product innovation that connects with users’ traditions. The research findings show that culture-orientated products have meaningful content that reflects users’ lifestyles as well as providing them with symbolic personal, social and cultural values, and that these aspects facilitate product acceptance.
Keywords

Culture
Culture-orientated design model
Emotional factors
Human-centred design
Material factors
Novel design concepts
Product acceptance
Product design
Product innovation
Socio-cultural factors
Social practices
Technology/design factors
Botswana.
# Table of Contents

Dedication.......................................................................................................................... ii  
Abstract................................................................................................................................. iii  
Keywords................................................................................................................................. iv  
Table of Contents................................................................................................................... v  
Statement of Original Authorship.......................................................................................... ix  
Acknowledgements................................................................................................................ x  

## Chapter 1
**INTRODUCTION** ................................................................................................................. 1  
  1.0 Introduction.................................................................................................................... 2  
  1.1 Motivation for Choosing this Topic................................................................................ 3  
  1.2 The Research Problem in Context................................................................................. 4  
  1.3 Research Question......................................................................................................... 5  
  1.4 Research Aim and Objectives........................................................................................ 5  
  1.5 Significance of the Study ............................................................................................... 5  
  1.6 Structure of the Thesis.................................................................................................... 6  
  1.7 Summary....................................................................................................................... 8  

## Chapter 2
**A CULTURAL ANALYSIS OF BOTSWANA** ........................................................................... 9  
  2.0 Introduction................................................................................................................... 10  
  2.1 Culture.......................................................................................................................... 10  
  2.2 Globalisation and Culture............................................................................................... 12  
  2.3 Postcolonialism and Botswana’s Context: A Theoretical Framework............................ 14  
  2.4 Botswana’s Society........................................................................................................ 17  
  2.5 Summary....................................................................................................................... 24
# Table of Contents (continued)

## Chapter 3
**ELEMENTS OF BOTSWANA’S CULTURE: ECONOMY, SOCIAL CLASSES, MATERIAL CULTURE AND CONSUMPTION**

3.0 Introduction ................................................................. 27  
3.1 Social Classes ................................................................. 27  
3.2 Material Culture and Consumption ....................................... 33  
3.3 Gender Relations ............................................................. 40  
3.4 Summary ................................................................. 45

## Chapter 4
**ELEMENTS OF BOTSWANA’S CULTURE: GENDER RELATIONS, EDUCATION AND LANGUAGE**

4.0 Introduction ................................................................. 47  
4.1 Education ................................................................. 47  
4.2 Language ................................................................. 53  
4.3 Folktales ................................................................. 59  
4.4 Summary ................................................................. 64

## Chapter 5
**DESIGN AND CULTURE**

5.0 Introduction ................................................................. 67  
5.1 Culture’s Influence on Design ........................................... 67  
5.2 Constituents of a Novel Design Concept .................................. 74  
5.3 Summary ................................................................. 80
Table of Contents (continued)

Chapter 6
HUMAN–CENTRED DESIGN AND ITS APPLICATION IN BOTSWANA........81
  6.0  Introduction.......................................................................................82
  6.1  Human-centred Design.................................................................82
  6.2  Human-centred Design Process......................................................83
  6.3  Usability and Designing Pleasurable Products...............................86
  6.4  Benefits and Limitations of Human-centred Design.........................89
  6.5  Critiquing the inadequacy of Human-centred Design in Botswana........91
  6.6  Summary.......................................................................................94

Chapter 7
RESEARCH METHODOLOGY....................................................................96
  7.0  Introduction.......................................................................................97
  7.1  Experimental Design and Sampling Method .....................................98
  7.2  Role of the Researcher.................................................................102
  7.3  Data Collection Procedure.............................................................103
  7.4  Coding Framework..........................................................................105
  7.5  Summary.......................................................................................111

Chapter 8
DATA ANALYSIS AND INTERPRETATION..............................................112
  8.0  Introduction......................................................................................113
  8.1  Identification of Socio-cultural Factors............................................114
  8.2  Integration of Socio-cultural Factors in Product Design....................118
  8.3  Using Socio-cultural Factors to Generate Novel Design Concepts........126
  8.4  Facilitation of Product Acceptance..................................................128
  8.5  Summary.......................................................................................132
Table of Contents (continued)

Chapter 9
FINDINGS...........................................................................................................134

9.0 Introduction.................................................................................................135
9.1 Approaches Towards Cultural-orientated Design ......................................135
9.2 Culture-orientated Design Model.................................................................138
9.3 Cultural Product Innovation.........................................................................142
9.4 Culture-inspired Product Acceptance.........................................................146
9.5 Summary......................................................................................................151

Chapter 10
DISCUSSION AND CONCLUSIONS.................................................................153

10.0 Introduction...............................................................................................154
10.1 Main Theoretical Contribution of the Study..............................................154
10.2 Contribution to Knowledge.......................................................................163
10.3 Limitations of the Study...........................................................................165
10.4 Future Research Areas..............................................................................165
10.5 Summary.....................................................................................................166

REFERENCES......................................................................................................167

APPENDICES.......................................................................................................187

Appendix 1 Sample Folktale Script.................................................................188
Appendix 2 Sample Coded Script from a Framework of A Long Term Vision for Botswana...............................................................192
Appendix 3 Design Brief...................................................................................194
Appendix 4 Interview Protocol........................................................................197
Appendix 5 Sample Coded Report....................................................................202
Appendix 6 Sample Coded Images...................................................................204
Appendix 7 Tables with Coded Segments......................................................208
Appendix 8 Sample Coded Interview Script..................................................212
Statement of Original Authorship

The work contained in this thesis has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Richie Moalosi
March 7, 2007
Acknowledgements

There are a number of people who have contributed to the writing of this thesis and without their input, this research would have been impossible. I would like to thank the University of Botswana for their financial support and for having given me the opportunity to pursue doctoral studies.

I owe my greatest debt of gratitude to my Principal supervisor Professor Vesna Popovic for her enthusiasm, support, guidance and expertise in helping to develop a convincing thesis. You provided a thoughtful and useful critique which has been extraordinarily helpful. A special thanks to my Associate supervisor Dr Anne Hickling-Hudson for sharing her expert knowledge on cultural studies. Her thorough and constructive comments on the review of the thesis drafts have deeply influenced the structure of this thesis. I’m truly grateful to the University of Botswana’s forth year design students (2005 group) for their participation and valuable input.

Most importantly, I owe special thanks to my wife Lydia, for her patience, wonderful support, looking after the family and keeping my spirits high throughout the years I disappeared from home. Your love, care and encouragement provided a solid foundation and steered me throughout the times that were rather tough. Finally, to my children Loretta and Melvyn, daddy is finally coming home forever.
Chapter 1

INTRODUCTION
1.0 Introduction

Culture encourages innovation and experimentation but this is likely to fail if the innovation is not accepted by the users (Gans, 1974).

This thesis seeks to develop cultural strategies that will improve the potential of using the human-centred approach as the key to designing cultural-orientated products. Products can make a meaningful impact on the society if they the portray users’ culture. This has made culture an important area of research. Despite culture’s significance to design, there are no guidelines on how designers can be assisted to consciously integrate it into product design. The lack of a comprehensive framework has inspired the study of such a topic from a Botswana’s perspective. Botswana is an upper-middle-income emerging economy and much of its culture has been influenced by colonialism, postcolonialism and globalisation. In this thesis, the term design refers to a process (the act of designing); or to the result of that process (a design, sketch or model); or to the products manufactured with the aid of design (designed objects) or to the overall pattern of a product. The meaning of design shifts according to the context in which the word is used.

In analysing Botswana’s current culture it is useful to draw from post-colonial theory, which 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. In most cases, Western culture has dominated, especially in the areas of economy, education and language. Botswana’s culture has started to decolonise in these areas but the process has not yet gone very far. For example, the education system is heavily influenced by Western values, and this has resulted in a system which does not respond adequately to the society’s needs. The design programmes are no exception, because they tend to be detached from the needs of Botswana’s social classes.

It is against this background that the thesis developed an approach to analyse a socio-cultural framework that accurately represents Botswana’s culture and a set of core socio-cultural factors applicable to making Botswana’s product design more human-centred,
rather that emulating Western design form and substance that does not adequately reflect the culture and needs of the local people.

1.1 Motivation for choosing this topic

The motivation for exploring this topic stemmed from the major curriculum restructuring which was conducted by every faculty at the University of Botswana in 2000. As an industrial design lecturer, the author participated in the restructuring exercise and this resulted in introducing local thought and content into most of the programmes, compared to their previously heavy Western influence. The British-derived programme was based, in level one, on understanding basic science principles, and in level two, on integration of engineering and design principles. Therefore, the foundation of the programme overlooked the social aspect of design, such as Botswana’s culture. The programme needed to be re-defined so that it correlated with the society’s needs. The restructuring exercise was an attempt in particular for the Design programme to respond to local and national needs.

However, it seems that this notion has not gone far enough to address some of the fundamental needs. The new programme does not adequately reflect the socio-cultural aspects of Batswana, such as values, traditions, and how studies of design should be aligned to these aspects. Scholars such as Reese (2002) and Ask (1997) argue that there is a lack of industrial designers’ know-how in cultural integration, stemming from a gap in the education they received. This creates a void in the education of designers regarding the importance of culture in design. Researchers such as De Souza (1999) argue that cultural integration plays a significant role in the effective design of products, and that culturally orientated products create stronger bonds with users. It is from this premise that the author is studying a topic which seeks to understand and define how design can respond to the local context. For this study, the local context entails understanding Botswana’s culture and how the same can be used to inform product design in terms of product innovation and facilitating product acceptance. Now, the question is: How can culture be integrated into product design within Botswana’s cultural context?
1.2 The research problem in context

Design should be grounded in cultural values and political principles expressed by the society (Asmal, 2001). The evidence in the literature (Onibere et al., 2001; Hugo, 2002; Kotro and Pantzar, 2002; Aykin, 2005) and this researcher’s experiences suggest that there is a lack of in-depth research and appropriate methods to assist designers with how culture can be consciously integrated in product design. The current design approaches, with their standards, rules and guidelines, fall short with respect to issues relating to the cultural context (Shen et al., 2006). There is no solid theoretical framework linking design and culture (Saha, 1998; 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; further, the framework 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. However, embodying cultural factors in new product development is not a straightforward subject because it is an under-researched area (Taylor et al., 1999). Lee (2004) observes that in the design field, major topics in cultural design are still limited to identifying aesthetic stereotypes such as the national shape or colour. These manifestations show that there is no well defined framework that can assist designers to respond to many unanswered questions and problems with regard to the integration of culture in design.

Other researchers, for example Baxter (1999) and De Souza and Dejean (1999) acknowledge that users are not only physical and biological beings, but also socio-cultural beings. Given that users have been cultural beings (in the design area) for only a relatively short part of their biological evolution, there is an argument that designers have not yet been able to consciously encode cultural phenomena in design to the same extent as cognitive and physical phenomena. This is supported by sparse design literature on socio-cultural factors, especially from an African perspective. Examining such a research problem using qualitative approaches, will assist design educators, students and designers to better understand how cultural factors can be integrated in the design process.
1.3 Research question
The research question and its sub-questions are framed as follows: What socio-cultural factors impact upon human-centred design in Botswana?

- How can socio-cultural factors be integrated into designing products?
- How can socio-cultural factors be used to generate novel design concepts and facilitate product acceptance?

1.4 Research aim and objectives
The aim of this study was to investigate the impact of socio-cultural factors upon human-centred design in Botswana. This aim was accomplished by developing a socio-cultural framework which can inform the process of design. Furthermore, the study developed a set of socio-cultural factors that can be transferred and applied into product design features, and show how these factors can be integrated into the human-centred design process. The objectives of this study were attained by:

- extracting socio-cultural factors from Botswana’s folktales and other contemporary sources,
- transferring and applying the appropriate socio-cultural factors into product design features,
- investigating whether these factors can generate any innovative design concepts and facilitate product acceptance.

1.5 Significance of the study
Although it is widely agreed that culture should be the basis of product design and development, several major authors in the field do not elaborate in depth on how this can be achieved (Baxter, 1999; Buchanan, 2001; Bruce, 2002; Leong and Clark, 2003; Stanton, 2003). Little empirical research has been conducted on this topic especially from a Botswana’s perspective.

This study is expected to improve design practice in Botswana and, by implication, in other developing countries, especially by its findings on how socio-cultural factors may
be encoded into the design process. It is argued that this has the potential to lead to novel and culturally orientated products.

At present, Botswana does not have a national design policy. Issues on design are either briefly dealt with in the National Policy on Culture (2002) or in the Science and Technology Policy (1998). Both policies acknowledge the relevance of culture in product design. It is envisaged that the findings of this study will contribute significantly to the realisation of a design policy.

The study will assist Botswana Research Centres involved in industrial or product design to design culturally orientated and human-centred products. This point is also echoed in the document ‘A framework for a long term vision for Botswana 2016’ (1996) which states that the existing centres in Botswana for research and development will need to be strengthened and focussed so that their output is relevant to the development needs of the country. It is envisaged that this study will strengthen their research and development capabilities.

1.6 Structure of the thesis

The early chapters in this thesis introduce the field of culture and design, as well as the background information to the study. Chapter 1 outlines the interest on the research topic, research problem, questions, objectives and the significance of the study. Chapter 2 defines culture, and examines its multi-layers and their relevance to product design, because any artefact realised within a culture should be meaningful to its users. It also analyses how Botswana’s culture has been influenced by colonialism, postcolonialism and globalisation.

Chapters 3 and 4 analyse postcolonial theory in relation to the selected main cultural elements of Botswana’s society. Such elements include education, gender relations, social classes, language, folktales, material culture and consumption. These cultural elements are interwoven with such key concepts as hegemony, hybridity, discourse and representation. These chapters develop a Botswana theoretical cultural framework.
Chapter 5 analyses how culture and design are intertwined. Modifications in culture’s evolution reflect and determine developments in design. The chapter stands on the premise that culture can be used as a catalyst to designing innovative design concepts.

Chapter 6 examines the concept of human-centred design and its application within Botswana’s context. Botswana designers still approach design using traditional methods based on engineering principles. Arguments are advanced on how this concept can be used to design pleasurable and cherishable products. The chapter concludes by reviewing some of the advantages and disadvantages of using the human-centred design approach to product design.

Chapter 7 explains the rationale for the qualitative approach to the research questions and why the experimental research method was adopted. An experiment was conducted with the design students at the University of Botswana. Information on the access to the study site and participants’ consent, experimental procedure and sampling, the researcher’s role, data collection and the development of the coding system are explained in detail in this chapter. Chapter 8 analyses how visual and textual data were interpreted using the developed coding framework. The interpretation is based on four areas: identification of socio-cultural factors that impact upon design, how the same were integrated in designing products, and whether they can be used to generate novel design concepts and facilitate product acceptance.

Chapter 9 focuses on the main findings of the research. It affirms that culture can be used as a catalyst for product innovation and facilitate product acceptance. A culture-orientated design model has been proposed to assist designers to encode social and cultural human factors in product design. Chapter 10 discusses and compares the research findings with existing studies, and examines their significance to Botswana’s design context as well as to other new emerging economies. The study provides a point of departure from other related studies because it not only acknowledges the importance of culture in product design, but it proposes ways in which this can be achieved in designing culturally orientated products. The chapter concludes the thesis by discussing the
significance of the research findings and their implications to Botswana. It also outlines the study’s contribution to knowledge and, finally, proposes future research topics which emerged from the study.

1.7 Summary

It is clear that this research topic is under-researched, especially from a Botswana’s perspective. The research area has great significance for improving design practice in the country. The research question seeks to establish the missing relationship between socio-cultural factors and human-centred design in Botswana. This question was answered by developing an integrated theoretical framework for culture and design. In order to establish the appropriate socio-cultural factors, it is vital to draw on postcolonial theory, which seeks to understand the culture of countries such as Botswana by exploring the tensions between pre-colonial, colonial and postcolonial eras. Obviously, 82 years of British colonialism and its aftermath have had a profound impact on the social and cultural fabric of the society. From this premise, the next chapter explores a socio-cultural framework for Botswana.
Chapter 2

A CULTURAL ANALYSIS OF BOTSWANA
2.0 Introduction

The purpose of this chapter is to draw from literature, and develop, a cultural analysis framework relevant to Botswana. This chapter is divided into two parts. The first part discusses the concept of culture and how it is affected by globalisation. The second part examines the usefulness of postcolonial theory in understanding Botswana’s culture, and discusses how key concepts such as postcolonialism, globalisation, hybridisation, hegemony, discourse and power/knowledge can be applied to exploring culture. Botswana’s contemporary culture has been greatly influenced by postcolonialism, and in the process new cultural identities have been produced distinct from the original pre-colonial culture. In analysing Botswana society, a postcolonial view does critically deconstruct the tenets of neo-liberalism; for example privatisation, free trade, opening up of the economy to further control by multinationals, trickle-down assumptions and reduction of government’s social services. This view is having a negative impact on the economy and the lives of the people of Botswana.

2.1 Culture

Culture is not a timeless and motionless body of value systems that remains unaltered by social change; rather it is dialectic and incorporates new forms and meanings while changing or reshaping traditional ones (Parsons, 1999). Thus, it is conceived as a coherent body of beliefs and practices which are dynamic and changing within particular historical periods. Culture is multi-layered. Stephan (2004) suggests two layers (visible and invisible), Schein (1999); Lee (2004) proposes three levels (basic assumptions, values and artefacts); Hampden-Turner and Trompenaars (1997) and Spencer-Oatey (2000) argue for four layers (basic assumptions and values; beliefs, attitudes and conventions; systems and institutions; artefacts, products, rituals and behaviour) These are illustrated in Figure 1.
Figure 1 Layers of culture (Spencer-Oatey, 2000)

However, it is hard to draw a precise line between the notions of ‘basic assumptions and values’ (Spencer-Oatey, 2000). In her model (Figure 1), Spencer-Oatey proposes combining the two to form the inner core of culture. It is argued that ‘basic assumptions’ are factors which are deeply held by the society, constituting the invisible core ideas that inform the other layers, whilst ‘values’ involve observable culture that the society claims to hold; for example ethics and aesthetics. Group members are unlikely to share identical sets of ‘beliefs, attitudes and conventions’ which make up the second inner layer (Figure 1), which consists of expectations of how people behave in various situations. The second layer influences the third layer, consisting of ‘systems and institutions.’ These are structures of a society within which values and norms are transmitted. Culture is associated with social groups, and people are simultaneously members of a number of different groups and categories. This third layer is encircled with a split outer layer of culture composed of ‘artefacts and products’ (material items) on one side, and ‘rituals and behaviour’ (non-material elements) on the other. Artefacts include the visible and easily described elements of culture which have an immediate emotional impact (Schein, 1999). Designers tend to overlook incorporating the inner core layers of culture and design products that are based mainly on the outer layer (Lee, 2004).

Culture can be broadly defined as the beliefs, value systems, norms, mores, myths, symbols, language, behaviour and structural elements of a given group or society (Parsons, 1999; Onibere et al., 2001; Hugo, 2002). What is missing in this definition is
the reference to the use and production of artefacts which are the primary concern of this study. This concern is better addressed by Stanton’s (2003) discussion of culture as the complex symbols and artefacts created by a given society and handed down from generation to generation as determinants and regulators of human behaviour. However, it still omits the inner core elements of culture such as basic assumptions and values. Therefore, this study defines culture as a shared set of basic assumptions and values, with resultant behavioural norms, attitudes and beliefs which manifest themselves in systems and institutions as well as in material and non-material elements.

Despite a lack of consensus among scholars, there are several essential common threads that run throughout the various conceptualisations and definitions of the construct of culture. Culture represents some form and degree of collective agreement; cultures are collectively oriented phenomena. For example, cultural values determine whether behaviour and attitudes are defined as good or bad, acceptable or unacceptable and worthy or unworthy. Culture refers to the sharing of important interpretations of entities, activities, and events (Du Gay et al., 1997). That is, it is not sufficient for members of groups and societies to have common interpretations of entities, activities and events; it is also necessary that there is awareness among the members that their interpretations are shared. Moreover, cultural patterns are manifested symbolically in the form of artefacts. The common member experiences — most notably history; language; political, economic and social experiences; family; aesthetics and religions — are among the most important influences on the development of cultural patterns. These cultural patterns and effects are transmitted across generations, and the social influence of cultural patterns provides a set of compelling affective, cognitive, and behavioural orientations for members of that culture. Finally, members of specific cultures are presumed to abide by a set of norms reflecting these commonalities.

2.2 Globalisation and culture

Botswana’s culture has been affected by external forces such as globalisation — the process of the intensification of economic, political, social and cultural relations across international boundaries (Akindele et al., 2002). It is an evolution which is systematically
restructuring interactions 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.

In some respects, globalisation has had disastrous effects on African culture in general and Botswana’s in particular. A postcolonial perspective argues that globalisation in its current neo-liberal form has been developed on the foundation of the old colonial empires. It further intensifies the homogenisation of Western economic influence, ideas, cultures, values and even lifestyles, as well as the deterritorialisation and villagisation of the world. The term *deterritorialisation* refers to the weakening of ties between culture and place, such as the removal of cultural subjects and objects from a certain location in space and time. On the other hand, the term *villagisation* refers to the grouping of the population into centralised planned settlements. This term is usually confused with ‘resettlement’ as the two policies often occur at the same time and may overlap. The basic notion of villagisation is regroupment into villages, which usually does not involve moving significant distances, whereas resettlement involves large-scale movements of the population.

The relationship between cultural values and globalisation can be understood if people recognise that, while in the past the significant agents of socialisation were the family and the school, at present, the media and the global communication industry is providing additional sources. The effect that globalisation has had on culture is immense and diverse. It has affected people’s cultural behaviour in different ways. People have had, in some cases, to change their ways of living. The question of culture is inextricably bound up in media and mode of communication (Pillai, 2002). Communication is the vehicle through which culture is passed from one generation to the next. The new electronic
communication media such as fibre optics, satellite, email and the internet have changed ways of living in both developed and new, emerging economies.

Globalisation has made culture the most important asset to work with in the field of design (Lee, 2004). As culture has become a critical issue, designers have not been accepted from this paradigm shift. After all, it is a designer’s ultimate role that shapes people’s everyday culture by creating new products. In spite of whether designers consciously intend to create cultural objects or not, all the artefacts they design will eventually reflect the culture of that time. The next section analyses the effects of postcolonialism on Botswana’s society.

2.3 Postcolonialism and Botswana’s context: A theoretical framework

Although Spencer-Oatey (2000) does not provide in-depth analysis on her model, it will be used as a basis to analyse elements of Botswana’s society in conjunction with Botswana’s theoretical framework proposed by Parsons (1999). His framework covers such topics as culture, economy, society, social class, gender, education, language, religion, politics, science and literature. Some of these cultural elements will be analysed in detail in the subsequent chapters.

The culture of contemporary Botswana has been influenced by postcolonialism and in the process, new cultural identities have been produced. The dominant national culture of Botswana today reflects the dual heritage and intermingling of the local and English cultural dominions (Parsons, 1999). In practice, the two languages and cultures are subtly mixed and alternated in urban and rural situations. However, the people of Botswana are in the process of decolonising their culture, which involves challenging and rethinking the dominant Western values. Postcolonial theory is useful to this study because it challenges certain patterns of domination by deconstructing the power relations within them and by acknowledging the value of cultural membership (Moalosi et al., 2005b). Postcolonial theory challenges Western knowledge construction, truth and representation, and calls into question claims of academic knowledge and intellectual authority (Hickling-Hudson et al., 2004). It also challenges, among other important things, the
ways in which the identities, norms and practices associated with culture are modified. Postcolonial theory articulates notions of the resistance by the Batswana (the people of Botswana) and at the same time examines complicity, thus analysing how people actively reject, appropriate and modify colonial values, practices and technologies as they decolonise.

Botswana’s culture, having been shaped by colonialism, was heavily influenced by British culture. Colonialism changed the socio-cultural, economic and the political systems of Botswana. Postcolonialism seeks to explain the social past, in order to achieve a freedom of cultural choice that is no longer bound either by colonial restriction and hegemony, or by national pasts which took shape in opposition to colonialism, but remained chained to the premises of the latter in its very self-definition (Dirlik, 1997). Botswana’s culture has started to decolonise aspects of the economy, education, social interaction and culture, but the process is just beginning. This point is reiterated in the document ‘A framework for a long term vision for Botswana 2016’ (1996), which observes that after a period of change and disruption, the country may be facing a form of ‘identity crisis’. Therefore, it is important that culture built over a long period of time is strong enough to filter the influx of new ideas and patterns of behaviour without losing its coherence. The process of rediscovering identity should be based upon shared values. In the case of Botswana, it entails the idea of the coming together of two or more cultures as a result of colonialism, to produce new, hybrid cultural identities characteristically distinct from the cultures that merged (Hall, 1996). Contact between two cultures leads to people borrowing or learning from one another (diffusion) or transculturation (merging and converging). This has transformed individual and group identities and created new ethnicities based on fluid rather than fixed identities (Moalosi et al., 2005b). In the process, old habits had to give way to new attitudes, values and modes of action. Botswana’s contemporary culture is a result of this hybridisation. As Prakash (1995:81) argues,

...postcolonial culture is inevitably a hybridised phenomenon, involving a dialectical relationship between the grafted Western cultural system and an indigenous ontology, with its impulse to create or recreate an independent local...
identity. Such construction or reconstruction only occurs as a dynamic interaction between Western hegemonic systems and peripheral subversions of them.

When this is applied to Botswana’s context, it might mean that a postcolonial advance in thinking involves (a) the breaking down of Eurocentric codes, (b) recognising indigenous voices in the formation of postcolonial culture and (c) recognising that the latter is therefore a hybrid culture.

Decolonising nations go through a process of separation from their former colonial owners. The act of separation includes formal political independence as well as economic and cultural redefinition to render it distinct from the domination of the colonial power. Economic and cultural redefinitions are yet to decolonise fully in Botswana (Moalosi et al., 2004). This has been a continuous process, even long after formal political independence was achieved in 1966. It could be argued that this is a condition in which the legacy of colonialism practically, historically and theoretically is ever-present, even in the attempt to think beyond it.

During decolonisation, formerly colonised states such as Botswana tend to maintain the structures, relationships and attitudes formed in the colonial period (Wilson, 1994; Hargreaves, 1998; Parsons, 1999). Given this entrenchment of aspects of colonialism, Bhabha (1994) points out that decolonisation require 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. In support of the latter, African thinkers, intellectuals and literary icons such as Chinweizu (1975), Ngugi (1987), Mazrui (1999) and Achebe (2003) argue that African culture has to destroy all encrustation of colonial mentality; on the other hand, it has to map out new foundations for an African modernity. These intellectuals argue that culture in the postcolonial era needs to redress the misconceptions of knowledge and correct the negative ideas inculcated by colonialism into people’s minds. It is argued that this kind of approach, though radical, assists in gaining insight from past mistakes and shortcomings. It is about self-evaluation within the architecture of cultures in a globalising world.
This cultural task demands a deliberate and calculated process of syncretism, one which, above all, emphasises valuable continuities with pre-colonial culture and which welcomes vitalising contributions from other cultures and exercises inventive genius in making a healthy (and distinguished) synthesis from them all (Dirlik, 1997). For example, in design education, Botswana needs a different approach from the current system which is so predominantly based on Western values that tend to be detached from the needs of some of Botswana’s social groups (Moalosi et al., 2004).

2.4 Botswana’s society

The Republic of Botswana is a landlocked country situated in Southern Africa, with an area of about 581,700 square kilometres. The country is bordered by Namibia on the west, Zambia on the north, Zimbabwe on the north-east and South Africa on the south and south-east. Botswana is governed by a democratic multi-party parliamentary system and attained independence from the British on September 30, 1966, through peaceful negotiation. Some scholars (Parsons, 1999; Ramsay et al., 1996) argue that Botswana was granted independence peacefully because, given its poverty, it was a financial burden for the British. Under British rule, Botswana was known as Bechuanaland Protectorate. In 1885, three Batswana chiefs — Bathoen, Sebele and Khama — went to London to request protection against the South African Boer threat. The Boers wanted to incorporate Botswana into the Union of South Africa. In the same year, the British proclaimed a protectorate over Bechuanaland.

According to the 2001 census, Botswana’s population is 1,680,863 (Central Statistics Office, 2004), with 52% of the population being female and 48% male. The average annual population growth is 2%. About 22% of the population live in major towns and cities whilst the rest live in rural and semi-urban areas (Central Statistics Office, 2004). The majority of the urban population are in the capital city, Gaborone, and the second city of Francistown. Other major towns are Selebi-Phikwe, Orapa, Jwaneng, Sowa and Lobatse.
The first President of the Republic of Botswana, Sir Seretse Khama (1972), said that Botswana’s aspirations, goals, politics, principles must be identified and expressed in terms which Batswana understood. This means that everything should be built on the foundations provided by Botswana’s culture, values and traditions. The development plans of Botswana are based upon four national principles (democracy, development, self-reliance and unity) which form the basis of, and help to guide, the national moral values (A framework for a long term vision for Botswana 2016, 1996; Parsons, 1999; Gasenone et al., 2000; Makwinja et al., 2000). These principles are derived from Botswana’s cultural heritage and are meant to promote social harmony. This is a political discourse which seeks to articulate certain goals so as to encourage selected values, for example, national unity. Of late, a fifth principle, ‘botho’ has been added, which is translated as humane behaviour or etiquette. Humane behaviour refers to the concept of a person who has well-rounded character, who is well-mannered, courteous and disciplined. ‘Botho’ is one of the tenets of Botswana’s culture.

The document A framework for a long term vision for Botswana 2016 (1996) (referred to as Vision 2016) challenges Batswana to work towards seven broad dimensions: (a) an educated and informed nation, (b) a prosperous, productive and innovative nation, (c) a compassionate, just and caring nation, (d) a safe and secure nation, (e) an open, democratic and accountable nation, (f) a moral and tolerant nation and (g) a united and proud nation. The long-term vision offers a good direction for the future but it is too ambitious in its implication that these goals can be attained by 2016. It is far removed from the ordinary people’s lives, especially the youth and the poorer social classes. In support of this point, Piet (2006) stresses that Batswana are still not knowledgeable enough about Vision 2016. This lack of knowledge about Vision 2016 is one of the obstacles to attaining the vision’s goals and aspirations. It is now ten years since the inception of the vision but there is little to suggest that the goals are being attained. The United Nations Development Programme (2005) buttresses the latter point by acknowledging that Botswana will struggle to meet its Vision 2016 goals unless it takes decisive measures to significantly strengthen its science and technology capability, because the key requirements for the realisation of the vision (quality education, an
information society, productivity growth, export competitiveness and industrialisation) all require a strong technological background.

Botswana has a rapidly growing economy due to revenue from the export of diamonds (Parsons, 1999). However, it is doubtful as to whether more than half of the population has significantly benefited from the increased income and standard of living — beyond the general and widespread provision of schools, clinics, clean water and improved roads. The income distribution is highly skewed towards the wealthy social classes, and this implies that the benefits of high economic growth are not equitably shared. This is indicated by the fact that 36% of the population live below the poverty line. According to Central Office Statistics (2004), the unemployment rate is 19% and the Gross Domestic Product (GDP) average per capita is $3,600. The average inflation rate is approximately 6%.

The economy has been identified as one element which influences Botswana’s culture. At independence, Botswana was the third poorest country in the world. Batswana were pastoral and agricultural people living in communities bound by birth or allegiance to a hereditary chief in an elaborate social and political organisation. Historically, the economy has been based on cattle rearing and subsistence farming (Parsons, 1999). Cattle were of extreme importance socially and had an economic and cultural value (Shorter, 1974; Shillington, 1993; Gasenone et al., 2000). They were seldom slaughtered except for social or ritual feasting. The number of cattle an individual owned defined wealth and indicated the status and prestige of the head of the family (Macmillan, 1980; Parsons, 1999). Ties were established between family groups, and children were legitimated through the exchange of cattle as bride prize. These cattle established the husband’s title to the children of the marriage and guaranteed its stability.

Agriculture today provides the livelihood for more than 78% of Batswana who live in semi-urban and rural areas. This is underscored by the National Policy on Culture (2002), which highlights that the rural Botswana mode of life is invariably tied to land, manifested in agro-pastoralism and fishing, or a combination of these. Though agriculture is the main engine of the rural economy, due to poor climatic conditions since
independence, commercial meat and meat processing have declined to become the third most valuable source of national income (Parsons, 1999; Tlou and Campbell, 1997). In 1966, beef accounted for 97% of exports; yet by 2001, it accounted for 3% of the total (Central Statistics Office, 2004). By independence, agriculture contributed 40% to the GDP and in 2001 it declined to only 5%.

While pastoralism is the traditional revered occupation of the people, it has become increasingly subject to commercialisation and centralisation. Today, only a handful of elite farmers — many of them government officials such as Members of Parliament, Councillors, Land Board members and senior government officials — control the major share of the national cattle herd (Pearce, 1993). It could be argued that the concentration of livestock wealth in the hands of the urban elite has also concentrated political power in its hands due to the linkages that exist between wealth, social status and political influence. This has resulted in Botswana having one of the world’s greatest disparities between the rich and the poor. In the process, the ethnic minorities such as Basarwa (Bushmen) have been exploited as herdsmen by these elite classes. However, Parsons (1999) overlooks the fact that the political elite acts in its own economic interests to increase its control over access to land and water and to exclude commoners’ animals from the land around their own water points.

In fact globalisation has widened the gap between the rich and the poor, both between nations and within nations. The income of the wealthiest 20% of Botswana’s population is 24 times that of the poorest 20%, a ratio exceeded only by that of Brazil (Pearce, 1993). Education in Botswana appears to exacerbate income inequalities (Siphambe, 2000). The higher rate of return for higher levels of education indicates that the distance between the earnings of the highest and lowest paid worker in the skill hierarchy is large. When people’s social and economic rights and patterns are affected, their culture is affected too. The author argues that trade which is built on unacceptable levels of social inequalities to vulnerable communities and groups, causes global ecological or environmental damage. Further, it disregards people’s obligations to future generations, and is not conducive to sustainable development.
Despite the national obsession with cattle rearing, beef exports have declined over the years. It could be argued that mining earnings, in turn, are utilised to subsidise cattle rearing, making the leading herd owners very wealthy. The wealth generated from beef production does not improve the lives of the poor. Economic growth is essential but not sufficient to ensure equity, social progress and the eradication of poverty in Botswana (Darkoh and Mbaiwa, 2002). Although the livestock industry is the mainstay of the rural economy, heavy reliance on it has entailed substantial social and environmental costs, including the displacement of subsistence farmers and indigenous communities from their land. Moreover, there is insufficient development of initiatives such as spin-off industries related to beef production. Examples include leather tanning and manufacturing of leather products, which could provide employment to Batswana. Rather, hides are sold to the European Union — mainly Italy and Spain. It is disappointing that after 40 years of independence, Botswana still does not use some of the readily available raw materials like skins/hides from the Botswana Meat Commission, under the pretext that using them locally will not be economically viable (Sebopeng, 2004). This assumption by the government is not supported by any feasibility study. This results in exporting employment, despite the fact that in the year 2000, more than one in six job seekers could not find a job (United Nations Development Programme, 2005).

The declining traditional agricultural industry employs less than 10% of the labour force (Jefferis and Kelly, 1999). The increasing unemployment problem in Botswana can be seen as resulting from a combination of very limited opportunities in agriculture and the failure of the economy to generate sufficient jobs to absorb new entrants to the labour force. The agricultural sector is no longer sustainable as it is supported by subsidies from other sectors of the economy for the benefit of the beef barons and the richer rural households.

Apart from agriculture, minerals are the other pillar of Botswana’s economy. The strategy of national development has been to open up mining by private multinational capital with government equity participation to increase state revenues (Parsons, 1999). Diamonds, copper, nickel, gold, soda ash and coal are now the greatest contributors to the national
wealth. This revenue is used to provide social services; for example, 95% of the population has access to clean water and 94% has access to affordable essential drugs (United Nations Development Programme, 2003). In 2001, diamonds accounted for 84.5% of Botswana’s export earnings (Central Statistics Organisation, 2004). In 1966, mining contributed only 1% to the GDP and it now accounts for 45%. This growth is, however, defective, especially in relation to employment creation and poverty reduction. Despite its large GDP share, mining accounts for less than 5% of the total formal-sector employment, and its direct linkages with other sectors of the economy are weak (United Nations Development Programme, 2005). The author argues that Botswana’s over-reliance on minerals has led to a narrow economic base which has contributed to poverty. Mining is a relatively capital-intensive and technology-based activity, and the remaining sectors have proved unable to provide sufficient employment.

Before 2006, due to the monopoly of DeBeers Mining Company, all diamonds were sold through the Diamond Trading Company (DTC) in London and there was no competition from other stakeholders. The selling of diamonds through this channel meant exporting employment to the United Kingdom — employment that could be created within the country by opening up spin-off industries such as diamond cutting, polishing, and jewellery design and manufacture. The new 25-year lease agreement which took effect on June 2006 between the government and DeBeers has brought positive developments. During the negotiations for a new lease, DeBeers has agreed to relocate DTC from London to Gaborone. Diamonds mined by DeBeers around the world will now be aggregated in Gaborone. This will make diamonds available locally for cutting and polishing. The initiative will stimulate local job creation, while maintaining the full value for Botswana diamonds (Penny, 2006). Botswana will now move from being a diamond producer to a trader. This marks a turning point in the liberalisation of the diamond trade in Botswana and a positive step towards decolonisation of the economy.

Botswana undoubtedly has achieved social development in infrastructure and human resources (Parsons, 1999). However, in a small country with a population of 1.7 million and a GDP per capita of $3,600, it is undesirable to have more than 36% of people living
below the poverty datum line, and 19% unemployed. It is observed that among the major social, economic and political challenges facing the government are high inequality between social classes and lack of employment. The national development plan has identified rural development and employment creation as the two major goals of public policy (Parsons, 1999). Instead of striving for the creation of more job opportunities, the government has chosen to privatise 23 corporations dealing with essential services such as power, water, food, airlines, telecommunications and so on. Already there are fears of massive retrenchments, and all this is being forced on the people in the name of globalisation (Mokalake, 2004).

Governments feel a kind of a pressure of adaptation, which forces them to adapt themselves to the rapidly changing economical, political and technological environment (Szántó, 2001). This kind of adaptation is being undertaken without due consideration of its impact of the local people. Privatisation necessitates the handing over of the public institutions to the capital owners (elite classes and the trans-national corporations), whose interests are to maximise profits (Mokalake, 2004). This policy is pursued because of mounting pressures of neo-liberal globalisation, spear-headed by the World Bank (Akindele et al., 2002). This further indicates that the country’s resources will not be equitably shared, as the elite classes and trans-national corporations will benefit more. It could be argued that the trade liberalisation that is a part of neo-liberal globalisation will generally worsen the existing imbalances which have impeded development and aggravated poverty.

The wildlife and wilderness of Botswana enhance the tourism industry, which contributes 16% to the GDP. According to the Minister of Environment, Wildlife and Tourism, in 2005 tourism generated P12 billion — approximately US$2 billion (Mokaila, 2004). In the quest of diversifying the economy from over-reliance on diamonds, tourism is seen as the next pillar of the economy. However, it is argued that this sector has received comparatively low priority both in policy terms and the allocation of funds. This is in spite of the fact that this sector has increased its share of both the export earnings and government revenues that it generates, surpassing even the livestock sector share. There
are indications that this is compounded by the dominance of the beef barons in government and administration because they emphasise the livestock industry in national development plans at the expense of other alternative sectors such as wildlife tourism (Darkoh and Mbaiwa, 2002).

However, HIV/AIDS has begun to reverse the earlier developmental gains. The National Development Plan 9, 2003/4 indicates that HIV/AIDS poses a great threat to continued economic growth because of its impact on the labour force, savings and investment. Household resources are being reallocated to assist HIV/AIDS patients. This epidemic is most likely, therefore, to dissipate household incomes, and result in greater levels of poverty emanating from loss of breadwinners, increased rate of orphanhood, costs in health and loss of income-earning opportunities due to ill-health (National Development Plan 9, 2003/4). The HIV/AIDS scourge is bleeding the country dry in terms of human and financial resources. According to the Minister of Finance and Development Planning, Baledzi Gaolathe, in the 2005/06 budget, HIV/AIDS claims P650 million, which is the single highest amount of money allocated to one sector under the development budget. This amount is more than that allocated to seven other ministries combined, which share P605 million of the development expenditure (Gaolathe, 2005). This means that other areas of development receive little financial support, and signifies the attention and strain HIV/AIDS is exerting on the country’s economy. A large amount of this money is used to purchase anti-retroviral drugs which are given to patients free of charge.

2.5 Summary

This chapter has interwoven and analysed the relationships between the themes of culture, postcolonialism and globalisation, and their impact upon Botswana’s society. Botswana’s culture has been greatly influenced by colonialism in that foreign values and norms were blended within the local culture. Therefore, this hybridisation has resulted in new cultural identities. Botswana’s economy relies on mining and beef production and this has had a major influence on the composition of social classes, material culture and consumption patterns. However, the mineral economy has not produced equitable economic development but has produced new divides as the lower classes are faced with
chronic unemployment and poverty. The next chapter analyses Botswana’s social classes, material culture, consumption patterns and gender relations.
Chapter 3

ELEMENTS OF BOTSWANA’S CULTURE: SOCIAL CLASSES, MATERIAL CULTURE, CONSUMPTION AND GENDER RELATIONS
3.0 Introduction

This chapter examines and interweaves selected concepts of postcolonial theory in relation to the elements of Botswana’s culture, in pursuit of building a framework for cultural analysis. Some of the elements of Botswana’s culture relevant to this thesis include social class, material culture, consumption and gender relations, and these are analysed in terms of their relevance to design. These elements cut across the cultural layers identified by Spencer-Oatey (2000); for example, each social class shares common ‘basic assumptions and values’ and at the same time social classes are part of the society’s ‘systems and institutions’ (Section 2.1). Botswana’s social classes are different from those of Western society because of a lack of a well-developed industrial base; consequently, there is a large base of peasants, and a few elites who control the country’s political and economic power. Material consumption is also tied to social and economic standing in the society. It falls under ‘products and artefacts’ under Spencer-Oatey framework. Due to some customs and cultural practices, females are still struggling to get access to resources as compared to their male counterparts. In design, the gender issues can be addressed by researching females’ physical, cognitive, social cultural and emotional needs.

3.1 Social classes

The social class processes identified by Karl Marx and Max Weber are still the major factors shaping the broad contours of inequality in modern society. Social classes may be viewed as inequalities experienced by a society (Thomson, 2004). This broad definition does not elucidate some of the crucial factors causing this inequality. Social class analysis refers to the way in which groups in society can be arranged into a hierarchy which is recognised by members of that society, involving inequalities in such areas as power, authority, ownership of wealth, levels of income, education and prestige, working conditions, lifestyles and cultural practices. Social classes can be segmented using objective variables such as income, occupation, education, type of residential neighbourhood, material possessions, social skills and the family into which a person is born (Tumin, 1997; Lawson et al., 1997; Spencer-Oatey, 2000; McGregor, 2001).
A Marxist analysis of social class, though still influential, cannot today provide the only understanding of class because it is inadequate to describe current social formations. It does not adequately analyse (a) the location and role of the growing middle classes in modern societies, (b) gender and racial inequalities and (c) the situation of the absence of a revolutionary working class to push forward the transition of history from capitalism to socialism. Moving beyond the rigid Marxist doctrine, the concept of class can be made more conceptually flexible to identify Botswana’s social groups.

As elsewhere in the world, social classes in Botswana are fluid and without definite boundaries. Botswana’s class formation is a complex combination of traditional and modern groupings that fall between a peasant type and a capitalist type of social status. The rich and poor in rural areas are basically distinguished by ownership and holding of cattle (Parsons, 2000). In a case study conducted on Botswana’s social classes, Thomson (2004) broadly divided them into peasantry, proletariat, bourgeoisie and traditional rulers.

It is the peasantry rather than the proletariat which can be described as the masses in Botswana society (Samatar, 1999; Parsons, 1999; Molutsi, 2003). Peasants are small agricultural producers who, with the help of simple equipment and the labour of their families, produce mostly for their own consumption and for the fulfilment of obligations to holders of political and economic power. The social focus of peasants is on village life, and the family is still the main unit of production and consumption (Section 8.2). Since peasants make up the vast bulk of Botswana’s population, they are the main target for exploitation by those above them in the social hierarchy. Despite their reliance on smallholding farming, peasants often seek additional income and goods from the market by selling their labour (Sklar, 1999). Many peasants, therefore, have one foot in the traditional subsistence economy and the other in the modern capitalist economy, forming what Thomson (2004) calls the ‘peasantariat’.

Typically, peasants in Botswana keep three separate homes: one in the village, another at the lands where they do their farming, and a third at the cattle post, usually far from the village. This arrangement is referred to as the ‘three-residence system’ (Staugard, 1985;
Ramsay et al., 1996). During the colonial era, the most common means of transport used between these homes were sledges and ox-wagons. Nowadays, most people use donkey-drawn carts. Most carts are made by local craftsmen without much consideration to human factors, safety or aesthetics, but the emphasis is on functionality. The cart is used mainly for human and cargo transport. This is the cheapest mode of transport as most of the country is covered by the Kgalagadi Desert sands, and the peasants cannot afford to purchase four-wheel-drive trucks.

The other group within this class comprises the informal sector entrepreneurs (Thomson, 2004). These are individuals making a living from petty trading such as street vending by selling food, clothes, vegetables and handicrafts. This informal sector is dominated by women who find it impossible to access the formal sector (Parsons, 2000).

The low levels of industrialisation in Botswana cannot sustain a working class forming the majority of the state population (Sklar, 1999). This marks the key difference between African and European class formation. This working class (proletariat) represents a small proportion of the population (Samatar, 1999). It is composed mainly of urban labourers working in manufacturing industries, mining, government, transport industries and public organisations.

One of the obstacles to advancement for the peasant and working classes is their poor education, which results in low incomes and living in substandard housing. The peasants are relatively powerless, and their levels of material resources are low compared to their needs and aspirations. This group is closely tied to the family for economic and emotional support (Schiffman et al., 2001).

The middle classes are composed mainly of the petty bourgeoisie and commercial bourgeoisie. The petty bourgeoisie include owners of small-scale commercial farms and manufacturing industries, and the middle ranks of the salaried state bureaucracy (Molutsi, 2003; Thomson, 2004). The group own their means of production but they have not yet developed it into full-scale bourgeoisie. They are minor owners of productive property,
whose exploitation of other classes is limited. This social group is composed mainly of males, because women account for only 35% of the government’s total workforce (*United Nations Botswana Statistics*, 2003). Other groups associated with this class include self-employed artisans, small traders, teachers, soldiers, nurses and other middle ranks of the public service.

The commercial bourgeoisie include entrepreneurs, commercial farmers and land owners. This group possesses specialised managerial or professional skills; moreover, they regard access to education as the key to their class advancement. These classes strive to move up to the higher social classes (Etzel et al., 2004) through education and by pushing for career advancement.

The upper classes are composed of the bureaucratic bourgeoisie and traditional rulers (Parsons, 1999; Thomson, 2004). The small number of the political elite has control rather than ownership of the means of production, exploiting their command over institutions of the state to accumulate capital (Sklar, 1999). The ruling elite use political strength more than economic power to achieve and maintain their position of dominance. They use the state as their main conduit of privilege, and political power brings economic rewards. The bureaucratic bourgeoisie is predominately an urban coalition consisting of cabinet ministers, party officials, members of parliament, higher ranking bureaucrats and military officers, chief executives of public industries and professionals. This class has its historical roots within the colonial administration, having been employed by the colonial service to act as junior administrators and professionals. After independence (1966), this group rose to assume their former colonial masters’ jobs.

There is a sharp disparity between Botswana’s classes, with the upper class, or richest 10%, owning 57% of the national income (*United Nations Development Programme*, 2003). It is observed that the lifestyle of this social group is sharply detached from that of the lower classes, and they tend to display Western values to a greater extent than other social groups because of the effects of globalisation, which result in the standardisation of cultures. Increasingly, privileged people throughout the world have access to the same
cultural products such as music and films, the Internet, satellite television and radio. This class has an urban identification and is among the 22% of the population living in urban areas. In terms of design, this group demands quality and luxury products, and they buy expensive goods and services (Etzel et al., 2004).

The elite ruling class traditionally relied on its ownership of the main economic commodity, cattle, as its basis of power (Section 2.3). This commodity provided the surplus wealth that underpinned their political authority (Thomson, 2004). Even with the arrival of colonialism, traditional leaders managed to maintain their position as a ruling class. Molutsi (2003) observes that as Botswana entered the era of decolonisation, many members of the traditional cattle-owning elite went on to play a significant role in the nationalist movement. Bureaucrats tend to think more of what public programmes will bring for themselves in the short term, rather than economic development that would benefit the whole population in the long run. In support of the latter, Whaley (2004) argues that globalisation encourages the upper classes to use tools of economics and politics to exploit market opportunities, boost technological productivity and maximise short-term material interest in the extreme. Rich people everywhere have structured a world order that maximises their advantages while creating greater social and economic distance from those who are disadvantaged.

The emergence of a bureaucratic bourgeoisie as the dominant group within Botswana’s society has not totally eclipsed sources of traditional authority. Traditional rulers’ authority is based mainly on tradition and custom. Many traditional leaders have used their historic authority as a springboard to occupy positions of power within modern political systems (Samatar, 1999; Thomson, 2004). For example, the first President of Botswana Sir Seretse Khama was a hereditary chief. This, together with his educational credentials, provided the platform for him to come to power. Traditional leaders in Botswana include the headman of arbitration, chiefs and paramount chiefs.

Given these examples, there is little doubt that there is inequality in Botswana’s society. Although the political elite have provided social services for Batswana more than the
services provided in most other African countries, it is still a reality that not everybody has benefited equally from the country’s economic growth. Less than a quarter of the population is involved in the wage economy, while most do not own enough cattle to benefit from the decision to develop the industry (Thomson, 2004). One may argue that Botswana has experienced economic growth without any meaningful income redistribution of the same magnitude; this view is supported by the fact that most Batswana among the peasantry cannot even produce their own subsistence. Rather, they rely on relatives in the urban areas to supplement their income.

The inequality of these classes has always been embedded in the society. In pre-mining Botswana, ownership of the main resource, cattle, had always been highly concentrated towards the elite classes. For example, among the traditional farming households, 47% have no cattle and 24% have between one and eleven. At the other extreme, the wealthiest 2.5% of farming households own 40% of the national herd (United Nations Development Programme, 2005). However, the mineral economy has not produced equitable economic development either, but has created new divides. According to data on household income and expenditure during 1993/94, the poorest 40% of the population received 12% of the national income and the next 40% received 29%; the richest 20% received 59% (United Nations Development Programme, 2005).

However, social class dynamism offers people some opportunity for upward (or threat of downward) status mobility. Some people remain at the social level into which they were born; others make it through the educational system and manage to rise up the occupational and income ladder. For most of the population, occupation has become probably the most powerful single indicator of levels of material reward and social standing (Saunders, 1990).

The concept of social class is highly contested nowadays but, in terms of design, it is still useful because it assists designers to understand the values, lifestyles, consumption patterns, socio-political attitudes, interests and behavioural patterns of people. It is argued that greater affluence across classes combined with a wider range of products for sale
does not necessarily imply that class is less relevant when it comes to design and consumption. According to (Tomlinson, 1988:26) “…a residual occupational class effect remains very powerful with respect to consumption and lifestyle patterns.” Social classes are inextricably bound up with people’s lifestyle. One’s social class often determines what products are wanted, how, why and where.

It could be argued that social classes reveal possible demand structures of the society to which designers can then respond appropriately. People of any one class tend to associate more with one another than they do with members of other classes, and they tend to share endowments of cultural capital and values, and display similar consumption patterns (Lawson et al., 1997; Schiffman et al., 2001). Social classes are therefore homogeneous — a consequence of sharing similar standings within the hierarchy. This homogeneity allows designers to segment people by social class, and develop different products that appeal to different groups. Consequently, designers can target their products to niche groups; for example youth, women, pensioners, disabled people, social clubs and so on who share special common interests. Designers should therefore understand the differences and commonalities between these social classes so that they can respond positively to users’ needs, wants and aspirations.

On the other hand, social classes may not always be a relevant consideration in segmenting the society; other criteria such as age and gender are also appropriate. For example, the aging population is increasing, and poses new challenges for designing products that can assist the elderly in their everyday life (Section 8.3). It is estimated that the elderly population in newly emerged economies such as Botswana will more than double by 2030, and is by far the fastest growing part of the world’s population (Kinsella and Velkoff, 2001). It is important for designers to understand the material culture and consumption patterns of these social groups.

3.2 Material culture and consumption

Material products represent social aspects of culture. In addition, they carry embedded values (technical, economic, aesthetic and moral), ideas and emotions. Consequently,
these products embody and reflect the nature and structures of the social world. Material culture in Botswana provides evidence of the distinctive form of its society. It provides this evidence because culture is an integral part of society, just as the individual cannot be understood independently of society. This means that an understanding of society cannot be grasped independently of its material objects. Interaction with products is part and parcel of the communication which gives rise to social forms. Much of people’s daily lives is spent interacting with material artefacts rather than with other people (Dant, 1999). Therefore, material artefacts are part of Batswana’s lives, alongside other people they live with. Artefacts are useful in a variety of ways: they enable people to fulfil their desires, allow them to communicate and express their sense of cultural togetherness as well as their individuality within that collectivity.

Material objects tie Batswana to other people in the society by providing a means of sharing values such as responsibility, respect, self-reliance activities and lifestyles in a more concrete and enduring way. Material culture is not only about the products designed to help users to fulfil their basic needs; it is also an expression of how the society is organised (Dant, 1999). Therefore, designers are immersed in this material culture and draw upon it as the primary source of their thinking. Culture helps Batswana to make sense of products’ shapes, colours, and textures and determines how users make use of and live with products. Products are often the focus of action and they facilitate interaction. Users establish ‘quasi-social relationships’ with products (Miller, 1999; Ashkenazi and Clammer, 2000). It may be argued that it is through this quasi-social relationship with products that users both express their social identity and experience their location within society. It is a quasi-social relationship because the products stand in for other social beings. Products that designers make and use are a manifestation of social forms while also shaping them.

It is through different modes of interaction that users explore the properties of material products. Some products are experienced more through one mode than another. For example, a product might be functional and lack aesthetic values, or the reverse may be
true. Interactions with products work in a number of ways for human beings. The major properties of material products according to Dant (1999) are:

- function — the product extends or enhances the physical action of its users,
- gender — the product expresses gender action, identity and interest, through bodily display or sensuality,
- knowledge — the product delivers knowledge to the users by storing simple information or a synthetic understanding of some aspect of the world,
- aesthetics — the form or beauty of the product directly moves the emotions of users by representing social values,
- mediation — the product enables or enhances communication between humans — information, emotions, ideas and impressions that could have been communicated by speech, gesture, touch or expression. Such products carry messages about the culture from which they originate, and stand in for direct face-to-face social interaction enabling communication across time and space, and
- signification — the product signifies the social group membership of its user.

Though Dant (1999) provides scant detail about other product properties except mediation, his approach is useful to this study especially when analysing products.

Nonetheless, many products will deliver more than one of these properties in different degrees. The cumulative effect of these practices amounts to an over-determination of the social value of the product in that it is not merely used but, in addition, the product can be enjoyed at the level of imagination through fantasy and desire (Miller, 1999). Excess of capability suggests a latent property of products to be able to deliver human qualities, for example, love, status, security, cooperation, power and so on. According to Dant (1999), it is through these practices that products become fascinating, acquire a special status and become revered or worshipped for how they might enhance human capabilities. Such products are embedded with society’s values as well as the intentions and experiences of the designer.
Many modern products are made in a cultural context that is very different from the one in which they are used. In using them, users interact with the form of the product which tells users about functionality and aesthetic design, material technology and manufacturing techniques in the material culture of origin (Ashkenazi and Clammer, 2000). The features of material culture are embedded within the product and released as it is used. However, material culture is still human culture, so the autonomy of products is very limited. Products relate to the user, and the culture of which they are a part is unequivocally the culture of human society.

Modernity, with its rapid developments of technology and industrialisation, has increased the range of complexity of different things with which users have social relations. Products become more important as they are intertwined with the way users live their social lives. Material culture provides a way of understanding the social world because of the ways users appropriate it, through living with products in their everyday lives; by interacting with and using products, allowing the product to mediate between users and having quasi-social relationships with them. This model corresponds with Spencer-Oatey’s (2000) outer layer of culture (products and artefacts) and its influence in shaping material culture (Section 2.1).

Consumption is a key feature of material culture and it relies on social customs and practices (Dant, 1999). Products have symbolic value in social life. Culture and everyday life are increasingly being shaped by consumption of products rather than traditional social systems such as religion, family and politics. The value of products does not lie in their material form, but neither can it be judged in relation to abstract human needs. Therefore, material culture is based on exchange within a system of symbolic meaning, whose distinctions correlate in the social order of age, gender, time, education, work and leisure. Products are consumed for a variety of reasons: as gifts (for example, beaded necklaces of Basarwa are used as love letters by young girls), to express or confirm familial relationships, follow conventions and for ritual practices. Arts and crafts products in Botswana provide a fixed and visible meaning system by which culture is realised through a series of distinctions between time, place, activity and social location.
It is through locally designed products that Batswana have demonstrated how major stylistic features of their material culture such as the incorporation of animal representation have influenced local patterns. On the other hand, contemporary products such as mobile phones express the current state of technology, and the aesthetic and social knowledge of the culture that went into their production.

Consumption and display of scarce material and cultural goods has always been used as a marker of power and domination (Crompton, 1996). It is argued that consumption of products correlates broadly with education, age, gender and social standing. Therefore, occupation provides a reasonable indication of the social standing. Furthermore, the author argues that with the rising standards of living, issues related to consumption rather than production are becoming more important, and lifestyles — rather than classes — are playing an increasingly important part in shaping a whole range of attitudes and behaviours.

On one hand, there are links between a stratification system and varying patterns of consumption. It is through cultural practices of consumption that people differentiate themselves in a multiplicity of ways that complicate simple socio-economic class structure (Dant, 1999). Consumption is used as a marker of power and domination, and it is associated with the satisfaction of needs and wants. Needs are cultural. They are defined and produced by the systems of meaning through which people make sense of the world and thus are open to being re-worked and transformed. In consumption as in language, product usage changes or inflects the meaning of objects in particular ways, over time and in different contexts. Consumption should be regarded as an independent dimension of social stratification (Saunders, 1990; Milner, 1999). This has resulted in a social division arising out of the process of consumption. This division is between those who are able to satisfy their main consumption needs through personal ownership, on the one hand, and those who are forced to rely on collective provision through the government (peasantriat) on the other (Section 3.1).
Users vary in their consumption of products not only according to social class and power, but also according to their sex, age, occupation or even geographic location — factors that cut across any social class. Overall however, the information from users’ consumption behaviour still influences design in many ways. For example, the above factors lead to considerations of price, quality, ease of use, aesthetics, economics of operation, environmental friendliness and energy efficiency.

Women provide a lucrative target market for product designers because they constitute 52% of the population of Botswana even though they have limited access to financial resources. Designers need to research the needs, interests and preferences of females and cater for these in product design. On the other hand, females should be used not only as target users, but as active participants in the design activity, including the pursuit of careers in the design profession.

Individuals or groups do not respond in uniform and homogeneous ways to products with which they are confronted. If products have social importance as signs and symbols, then they exhibit identity value (Bourdieu, 1986). This argument is extended by Fuhrer (2004:35), who argued that “the cultural environment of artefacts is not only a reflection of what people are but also moulds what they may become.” This means that practices of consumption and the meanings evoked by products are socially structured. It is a continuous process of self-construction, relationship maintenance and symbolic competition. Bourdieu (1986:97) underscores this, stating that:

...our capacity to consume them refers both to our social positioning materially — in terms of the financial resources at our disposal, for example — but also symbolically, in terms of social dispositions and taken-for-granted assumptions, our cultural capital, that is, the norms of conduct we learn through our family upbringing and educational training. We bring our cultural capital to bear on those objects in terms of their appropriateness for us as certain sorts of people.

The view here is that consumption is influenced by five fundamental factors: social positioning in the society, financial resources, cultural capital, norms and educational
training. All these factors are part of the constituents of social class division or stratification (Section 3.1). These factors are also important to product design as designers need to know who their users are, as well as their users’ norms and values.

Consumption of products serves to mark social differences. It may be argued that consumption of products acts as a primary index of social status; therefore, it is associated with social standing. In Botswana, the share of income or consumption of the poorest 20% is 2% whilst that of the richest 20% is 70% (United Nations Botswana Statistics, 2003). Consumption expresses the tastes and lifestyle of these social classes and hence each class has a distinct taste structure and lifestyle. Users buy products for what the products mean as well as what they do. It is argued that products and services are seen to have aesthetic, emotional, personal and social meaning in addition to their purely functional purpose (Chapter 9 and 10).

Users’ consumption patterns reflect their self-definition (Arnould et al., 2004). Groups of users with similar consumption patterns share demographics, tastes and values such that consumption and lifestyle groups could be meaningfully identified. This is an important notion in the context of Botswana’s social classes, as the range of products the elite possesses becomes a method of displaying wealth and claiming the appropriate status in the social hierarchy. This raises significant issues such that possessions take the place of income as an indicator of status. The products that users buy become ‘symbols’ telling others who they are and to which social class they belong (Bourdieu, 1986; Lawson et al., 1997). Some people buy products for prestige or self-esteem, and this can be satisfied by incorporating appropriate product features. For example, products have a symbolic rarity and the more they are taken up by the masses, the less valuable they are to the elite classes.

Therefore, consumption practices are cultural phenomena and not simply economic phenomena. This is because the consumption practices always tend to have an identity value as well as a function value (Dant, 1999). Designers can communicate and embody product prestige in a way that is culturally appropriate for a particular social class. It is
evident that consumption and social class are not completely separate spheres of existence but rather mutually constitutive of one another. However, globalisation is altering consumption patterns as it often cuts across social classes (Section 5.1). Users across the world are getting access to similar products irrespective of their class position. However, studies conducted (Section 5.1) indicate that localised (culture-orientated) products have more appeal than global marketed products. It is impossible to separate the issue of class position of females from the feminist critique.

3.3 Gender relations
The effect of gender on design can be important, as men and women exhibit differences in their emotional, social and cultural responses to products. From a historical perspective, neither Marx nor Weber offered evidence of having considered gender issues in their analysis of class stratification. Therefore, stratification was concerned with neither the causes nor the effects of inequalities between the sexes. Males in Botswana are still widely regarded as the family breadwinner and are expected to go out and work, while the female’s primary role is in the domestic sphere (Parsons, 1999). However, this is a misconception, as there are families headed by unmarried working females. The traditional position of females is changing, as women are challenging some of the inherited assumptions and are seeking opportunities similar to those enjoyed by their male counterparts in contemporary Botswana society.

According to a study conducted by Siphambe (2000), females in Botswana on average earn less than their male counterparts at all education levels, but the inequality between the sexes becomes progressively less as the education standard rises. This imbalance makes females generally worse off than males in the modern sector, compared to the traditional sector. Households headed by females have half the average income in modern towns and two-thirds of average income in traditional towns and large villages, but have an equal share of poverty with households headed by males in rural areas (Parsons, 1999). In addition, there is gender dimension to the inequality in cattle ownership that is rooted firmly in tradition and culture; these ascribe ownership and control of livestock and related assets such as farms and boreholes to males. Approximately 66% of all
female farmers have no cattle, compared to 33% for male farmers. The average herd size for female farmers is six, compared to twenty for males (United Nations Development Programme, 2005).

It can be seen from these observations that males continue to dominate the structure of employment despite 52% of the population being females. Further, there is a continuous and disproportionate occupational segregation of male and female occupations. Only 18% of seats in parliament are held by females; and females in government at ministerial level, senior officials and managers constitute 35% of the workforce (United Nations Botswana Statistics, 2003). Clearly, females are still not equal citizens in law and practice. In new emerging economies females are at risk because they are still subjected to discriminatory laws and practices that prevent them from equal participation in employment (Tikly, 2003). The constitution guarantees everyone equality before the law irrespective of gender, but certain provisions of customary, common and statutory law discriminate against females (A framework for a long term vision for Botswana 2016, 1996). Socio-cultural factors such as traditionally ascribed productive and reproductive roles, lower levels of education and skills training inhibit females’ full participation in the economy.

Designers need to be aware of these cultural movements such as ‘Emang Basadi’ (women stand up), which advocate equal participation and empowerment of women in society. Postcolonial discourse has opened up a space for women in legitimising their public activity as they are emerging from their patriarchal pre-colonial and colonial positions and are becoming self-aware and conscious of their own capabilities in liberating themselves from the image of passivity and dependence (Loomba, 1998). They are searching for a new, different identity for themselves and obviously, national identity can change significantly. Female skill formation needs to take account of the broader social relations within which women’s skills are embedded in a way that challenges patriarchal cultural norms and values (Mazrui, 1999). These skills should build on women’s economic empowerment and financial independence and provide a protective framework of enabling legislation in the workplace and at home.
However, in emerging economies such as that of Botswana, females have found in postcolonial criticism an epistemology with which to counter universalised and hegemonic notions of gender. *Emang Basadi* is a non-governmental organisation which aims to strengthen women’s voices. It mobilises females to take steps that will help change the social, political, economic and legal position of females. The organisation also works towards greater equality and the removal of all cultural and legal barriers which hinder the advancement of women. Due to globalisation, *Emang Basadi* has joined other similar trans-national networks and alliances promoting women’s mobilisation and demanding recognition and rights from their respective nations and the international community (Werbner, 2002). For example, in Botswana female-headed families make up 41% of those living in poverty as opposed to 34% of the male headed households. This puts females at an economic disadvantage, with employment and wealth being decisively skewed in favour of males (*United Nations Millennium Development Goals Botswana Report*, 2004). More importantly, female-headed households have a significantly greater burden of dependents, lower income-earning capacity and fewer assets and other resources.

Despite legislation being made gender neutral, traditional and cultural practices and some financial institutions disadvantage Batswana women (*United Nations Millennium Development Goals Botswana Report*, 2004). To elaborate on this point, some financial institutions and government departments treat women as de facto minors, requiring them to seek their husband’s consent for transactions for which they would not place similar requirements on married men. It is against this background that women’s non-governmental organisations are trying to correct these abnormalities such as lack of access to economic opportunities and lack of participation in the decision making processes. For example, the common law recognises the man as the head of the family. This law entitles a man to take any decision, such as selling property or cattle, without the consent of his wife. On the other hand, the wife cannot do the same. Pitse (2004) states that due to pressure from non-governmental organisations, the government has enacted a radical law that makes married females joint heads of their households, along with their
husbands. This means, for example, that females may sit on Boards of Directors of Companies in their own right without seeking their husband’s permission.

How are gender issues applicable to product design? Designers have been considering gender issues at both physical and cognitive levels (Jordan and Junginger, 2002), and while the concentration on human factors has led to the creation of products which are effective and efficient the products have not always appealed to their users at emotional, social and cultural levels. Designers need to determine beforehand whether their products are aimed at predominately male, female or unisex users (Section 8.3). There are differences between males and females in terms of physical, cognitive, social, cultural and emotional attributes as well as perceptions of style, colour and form (Jordan and Junginger, 2002). Bolwell (1991) acknowledges that females’ perception of colour is different from that of the male population (Section 4.2). Consequently, the product should reflect the gender appeal of the target users. The author observes that when it comes to purchasing, users are influenced by the way the designer has structured his/her product’s gender appeal. Due to the changing roles of males and females in the society, designers should start addressing gender issues in design from a holistic perspective. This approach can give designers a rich understanding of their users as well as helping the designers to take into consideration gender differences in the design process. This could be attained by actively involving females in the participatory design sessions so that they can express their preferences, aspirations and interests (Bratteteig, 2002).

In order for designers to effectively consider gender issues in design, Jordan and Junginger (2002) propose a four-dimensional analysis of gender. The physio-dimension is familiar to designers as it deals with physical aspects of gender such as differences in physical strength and body dimensions. Anthropometric data is used to address user requirements. This data is based on Western standards and some aspects may not be applicable to the African context; for example in Western societies there is a growing problem of obesity whilst in some African countries there is a lot of famine. Ergonomics has so far been largely an American and Western European discipline (Chapanis, 2004). Technical design problems involved in adapting equipment to non-Western societies have
required the development of new ergonomic principles. Failure to take account of national and cultural factors may nullify the gains that one might reasonably expect to follow from the application of ergonomics in many areas of the world.

The socio-cultural dimension deals with the effects that socio-cultural constructs of gender have on the way in which users’ respond to products. Issues on gender can be reinforced by decisions made on products aimed at either males or females. In order for a product to speak to male or female users, it must communicate through symbols related to the contemporary cultural identity of their gender. Cultural identity is considered as the key to understanding how designers design in ways that influence users’ environments. Users define their identity by using products that signal how they see or want to see themselves — or rather, how they want to be seen by others. Products are cultural expressions that contribute to defining gender (Bratteteig, 2002). For example, pink has become the symbol for girls and every time this colour is used, it is associated with femininity (Section 4.2). The ideo-dimension postulates that males and females have differences in taste, values and aspirations. Clearly, products affirm views of masculinity and femininity. For example, in a study conducted by Bratteteig (2002) in designing games, it transpired that females were interested in practising social and emotional competencies whilst males were interested in dexterity skills such as speed and precision. Male users predominately adjust design and technology to their liking, but many female users had to adjust their lives to be able to use technological items (Oudshoorn et al., 2004).

The lack of female designers and engineers in Africa (Mazrui, 1999) might be attributed to male designers developing products according to their own preferences, technical capabilities and learning style. Products create new identities or transform or reinforce existing identities by delegating and distributing specific responsibilities, skills and tasks to users (Oudshoorn et al., 2004). Participation of more females in design might change some of the current design styles and paradigms.
Overall however, the call to designers in Botswana and elsewhere is to apply gender issues in the early stages of the design process, and to define how gender issues affect user requirement specifications. In this gender conscious society, gender may be significant in characterising how users experience, understand and envision the world. Bringing gender issues to design may contribute to a more open attitude with technical cultures moving towards different ways of thinking about product design and innovation.

3.4 Summary

Botswana has experienced economic growth over the years, without any accompanying income redistribution of the same magnitude among its social classes. This is supported by the fact that most Batswana cannot produce even their own subsistence; rather, they rely on relatives in the urban areas to supplement their income. It has emerged that social classes are no longer the sole determiners of consumption as globalisation has made products accessible to all classes. This is leading to the unification of users’ culture across the globe, so designers have to ensure that they encode users’ cultural diversity in products they design. In analysing gender issues in Botswana’s society, it has been revealed that whatever a female’s class location, she is often discriminated against within that class. The next chapter explores cultural elements of education, language, folktales and their applicability to design.
Chapter 4

ELEMENTS OF BOTSWANA’S CULTURE: EDUCATION, LANGUAGE AND FOLKTALES
4.0 Introduction
Botswana’s education system has been built upon on a foundation heavily influenced by Western values inherited from the colonial era. This chapter challenges such a system, which is detached from the society’s needs, and advances the argument for local content. It is through education that culture is passed from one generation to the next. Contemporary education should recognise the vital role played by traditional education, which influences the society’s values, beliefs, attitudes and behaviour. The society’s identity is driven by the use of language, which distinguishes one society from another. It is through the use of product language that artefacts speak to their users. Oral traditions (storytelling) is a body of expressive culture and it provides interesting similarities with the design process. It is against this background that this chapter examines education language, folktales and their influence on Botswana’s culture and design.

4.1 Education
Education plays an important role in inculcating a society’s values and norms and, therefore, it has a direct and indirect influence in moulding the younger generation to appreciate their society’s beliefs, attitudes and values. This section explores the role of informal and formal education and their influence on culture.

During the pre-colonial era, children were prepared in a variety of ways for their place in the social life of the adult community. Education for social life began at “initiation schools”, which introduced young people not only to the knowledge and skills appropriate for an adult of his or her sex, but also to the deeper values and beliefs of the society and the various levels of identity and loyalty within the community (Shorter, 1974, Parsons, 1999). Traditional education was family and gender-based; skills were taught by father to son and by mother to daughter. Grandparents and members of the older generation introduced children to religious beliefs and practices and to the basic values of the society, and thus to the inner layers of culture (Section 2.1). They were the principal tellers of myths and folktales, and singers of songs that convey such values. Grandparents played an important role in social integration of children and acted as a hyphen, linking the past and the present. The teaching methods included stories, riddles,
poetry, memory tasks, proverbs, myths, songs, dances and games (Agapitus et al., 1996; Makwinja et al., 2000). Children learnt by doing and imitation. Oral traditions played a major role because they were linked to the child’s education (Section 4.3). Special emphasis was placed on behaviour outside the home, on correct social relationships, courtesies, rights and duties (Tlou and Campbell, 1997; Parsons, 1999). The child was taught to obey and serve all adults in the community.

The author argues that traditional education looked to the past rather than the future. Children were taught to behave like their mothers and fathers and were not taught how to change things for the society’s future needs. They were taught to be like others, not to strive to outdo them, as competition was not necessary for the society’s cohesion (Forde, 1976). From today’s viewpoint, this type of approach is defective, though there is some value in traditional education in terms of moulding the child.

Formal schools were first introduced in Botswana by British Christian missionaries at the close of the nineteenth century. Schools have been the principal agent of social change, responsible for the break-up of the traditional ethnic groups as political entities. The school represented a threat to traditional family education. The school placed great emphasis on obedience and self-reliance; it also stressed intellectual achievements far more than practical skills (Morton and Ramsay, 1987). Education was more individual-orientated as opposed to being group-orientated. This has led to the society becoming individualistic, and this threatens some of the cultural values such as community spirit and teamwork.

The introduction of formal schools meant that the family education suffered. In the view of Shorter (1974), a gulf opened between parents and children. On one hand, parents knew nothing of the school and its life, and were quite unable to advise their children. On the other hand, children tended to despise their parents. The knowledge acquired by the young generation from school made it difficult for them to harmonise with traditional worldviews; they tended to despise the older generation, a tendency that has led to lack of respect for their elders and for the traditional values and institutions (Forde, 1976;
Parsons, 1999). Very little formal instruction could be given to a schoolchild in the home, and moral education or character formation was neglected at school (Macmillan, 1980).

Even in present day Botswana, society expects the school not only to impart academic knowledge, but also to inculcate moral and social values such as kindness, love, generosity and being receptive to others — and above all to mould children into responsible citizens (Nubuasah, 2004). Some parents suggest that the school is failing to inculcate the right moral behaviour in children. Teachers, on the other hand, are frustrated that parents are failing to play their role. The decay of traditional norms of morality and behaviour in secondary schools, colleges of education and the university is a testimony to the failure of the education system to impart acceptable values to students (Nubuasah, 2004). This is what Tikly (2003) refers to as a “pressure point” of African education torn between whether to reflect indigenous rather than external interests, and those of the marginalised groups as well as those of the national elite. Amidst this confusion, one can argue whether, in the global village, the school can be an effective transmitter of values as suggested by Nubuasah.

It is apparent that this lack of congruency between colonial education and Botswana’s reality has created a people abstracted from their original culture. Formal schooling was too bookish and it was geared towards producing elites, thus exacerbating stratification (Tlou and Campbell, 1997). Children were in a dilemma: the knowledge they sought from schools was like a double-edged sword: it took them further away from the values and the customs of their ancestors, and this forced them to negotiate two conflicting value systems simultaneously. The latter led in some cases to hybridisation of traditional and contemporary values and customs.

The education system was criticised for not responding to local needs as it tended to alienate children from their cultural roots and to create, not an appreciation of their background, but rather a tendency to look down upon it (Education for Kagisano, 1977). The education system, it was claimed, should orient young people towards the social, cultural, artistic, political and economic life of their unique society and prepare them to
participate proudly in it. This criticism continues to the present and has become a point of contention between government and other interest groups including academics, politicians and non-governmental organisations. Today’s accusations — which were once levelled at the colonial power of the pre-independence period concerning institutional and cultural imposition and the submergence of indigenous culture — are now being directed towards the present ruling elite. The challenge for the government after independence was to make education more responsive and realistic to the local needs, while on the other hand avoiding the elitist mentality.

The Botswana education system follows a 7-3-2 format; that is, the first seven years are primary education, the next three are for junior secondary school education and the final two years represent senior secondary school (equivalent to general certificate of secondary education). The transition rate from primary education to junior secondary education increased from 69% in 1991 to 98% in 2001 (UNESCO, National Report on the Development of Education, 2001). For 2000/2001 the transition from junior secondary to senior secondary stands at 49%, while it was 22% for 1994 and 38% for 1998 (Ministry of Education, 2004). The increases are attributed to the expansion of facilities that took place during these years. There are only 27 senior secondary schools as compared to 212 junior secondary schools and this limits the transition rate between the two levels. Some students who do not make it further up the academic ladder join Brigades and Vocational colleges. Technical Colleges admit about 12%. Out of those who manage to reach senior secondary level, the University of Botswana absorbs 36% and Colleges of Education admit 8%. Therefore, Botswana’s educational system follows a pyramidal type of structure. The level of education and participation of young people in the educational system drives a country’s level of literacy knowledge (Doole and Lowe, 2001). According to United Nations Development Programme (2003) Botswana’s literacy rate is 78%.

Females tend to participate as much as males do at all level of the education system. There is no significant difference in female participation at primary and secondary
schools and at the University level, but at Colleges of Education females dominate; the reverse is true at Technical Colleges (Table 1).

Table 1 - Percentage of female learners in Botswana in 1998 and 1999 Source: Ministry of Education (Botswana), 2004

<table>
<thead>
<tr>
<th>Institution</th>
<th>1998</th>
<th>1999</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Schools</td>
<td>49.9</td>
<td>49.7</td>
</tr>
<tr>
<td>Secondary Schools</td>
<td>52.9</td>
<td>52.5</td>
</tr>
<tr>
<td>Colleges of Primary Education</td>
<td>58.4</td>
<td>57.6</td>
</tr>
<tr>
<td>Colleges of Secondary Education</td>
<td>55.7</td>
<td>56.9</td>
</tr>
<tr>
<td>Technical Colleges</td>
<td>37.4</td>
<td>35.7</td>
</tr>
<tr>
<td>University of Botswana</td>
<td>47.4</td>
<td>47.8</td>
</tr>
</tbody>
</table>

It is argued that the low participation rate of females in technical fields is due to traditional upbringing and cultural misconceptions that viewed technical jobs as a male’s domain. This has facilitated the marginalisation of females in the society. All over Africa females are discouraged from Science and Technology careers because they are widely regarded as a preserve of males (Mazrui, 1999). This inhibits girls’ access to labour markets and creates a paucity of female role models in Science and Technology.

The author argues that the historical review from colonial times to the present shows not only the colonial legacy and the expansion of education in Botswana since the colonial period, but also the debates about whether the initiatives since independence have led to more of the same or charted a different path. This could be described as a mimicry; that is, the adoption by the colonised of the coloniser’s values, knowledge and technologies (Bhabha, 1994). The concept of hegemony, developed and discussed by Antonio Gramsci (cited by Ashcroft et al., 1998) is useful for exploring how the dominant group (Britain) maintains power and protects its interests. This domination is achieved by a combination of economic, educational, media, political and ideological means. Although political force (coercion) is always important, the role of ideology in winning the consent of the colonised may be even more significant. The balance between coercion and consent will vary from society to society, the latter being more important in capitalist societies such as Botswana. Ashcroft et al. (1998:117) observe that,
Consent is achieved by the interpellation of the colonised subject by imperial discourse so that Eurocentric values, assumptions, beliefs and attitudes are accepted as a matter of course as the most natural or valuable.

This means that such interpellation has led the colonised subjects to understand themselves as marginalised to those Eurocentric values. For example, such hegemonic control was maintained by the British as the Botswana secondary school curriculum followed the Cambridge Overseas Secondary School Certificate model until 2000. Even at present, Botswana only partially controls this process as the secondary school leaving examinations are now jointly validated by the Ministry of Education and the Cambridge University Examinations Syndicate. This kind of approach demonstrates the mode of hegemonic control the British still has over Botswana’s education system. Another example supporting this argument is the Design and Technology programme at the University of Botswana, which was heavily influenced by Western values until 2000. This point is buttressed by the view of the authors of the United Nations Development Programme (2005) that the current policy of sending many students abroad is not only counter-productive, it actually contributes to the mismatch in the skills requirement in the local economy and the actual skills acquired by those who get this level of training. More effort is needed to decolonise the education system so that it resonates with the broader cultural concerns of the society.

There are two 5-year degree design programmes run by the University of Botswana. In 1990 a Bachelor of Design and Technology Education was initiated and the target was educating students to be teachers of the same in secondary schools. The Industrial Design programme was started in 2003 aimed at producing industrial designers. These educational design programmes need to build their foundation on a Botswana socio-cultural perspective. If the programmes are not grounded in Botswana’s cultural values, then they will not be in a position to adequately respond to the society’s needs (Moalosi et al., 2004). In the process of decolonisation, educational institutions need to regularly evaluate their programmes to improve their responsiveness to the needs of the community. This is referred to as the ‘postcolonial self-recovery’ (Gandhi, 1998).
Batswana need to re-discover themselves and it is thorough education that a lot of misconceptions can be challenged and corrected. The level of education in a country determines the population’s familiarity with design and technology and their ability to work with it or create their own technology. Furthermore, it is through education that a new breed of designers can emerge who will appreciate the influence of culture in their design practice. The next section explores the notion of language and design within Botswana’s context.

4.2 Language

Culture and language are inseparable. Language is a means of communication and a carrier of culture, particularly through oratory and literature — the entire body of values by which people perceive themselves and their place in the world (Ngugi, 1987). The drive towards identity centres on language. In Botswana communities, a certain dialect separates one tribe from another and creates a particular identity for that grouping of people, based upon the way words are put together. The conflict brought into being by colonialism appears in the clash between the written and the spoken word. When the imperialist language was introduced, it subjected Batswana to a new language, a change brought about by colonialism. Batswana had to struggle with the new force that threatened their old customs. The fundamental questions were: should they reject it, adopt it or come to a compromise?

An emphasis on ‘complex identification’ is an important theme of postcolonial theory (Gandhi, 1998; Ivison, 2002). Complex identification refers to the diverse ways in which individuals and groups identify themselves culturally, socially and politically. Bhabha (1994) and Loomba (1998) discuss it as the hybridity of postcolonial identity (Section 8.4). They argued that identities and practices are constituted by in-betweenness and movement — the overlap and displacement of domains of difference. Hybridity seems to entail an ethical claim on behalf of a particular conception of the self and society, one that operates in the interstitial passage between fixed identifications and which opens up the possibility of a cultural integration that entertains difference without an assumed or imposed hierarchy (Loomba, 1998). Difference is important, not just as a description of a
situation, but more importantly because it shapes language and, therefore, the meaning of identity. The notion of hybridisation of cultural and national identities seems to entail a radical rethinking of how people conceive of cultural minorities in the first place, which in turn should force a rethinking of the nature of the idea of minority rights themselves (Bhabha, 1994).

However, language is the use of a set of signs or signifying system to represent things and exchange meaning about them (Du Gay et al., 1997). Language generates meaning and meaning gives people a sense of identity — of who they are and where they belong. It is central to meaning and culture and it has been regarded as the key repository of cultural values. Language externalises the internalised meanings people have constructed in their heads to make sense of the representation of the world and of events. Language expresses the thinking pattern of a culture. It is the medium through which people communicate messages, queries, knowledge and values to each other and pass them to the next generation (Murphy, 1979). It is the main vehicle of social life, for it mediates social interaction. Without language, culture would be impossible as people know it.

Botswana communities once relied on oral traditions. Oral traditions are messages that are passed by word of mouth from one generation to the next (Idowu, 1993; Parsons, 1999; Makwinja et al., 2000). When such messages are passed on long after their origin, and many years after those who created them have died, they become oral traditions (Section 4.3). They include folktales, proverbs, myths, and folklore told or sung. Before the written word was introduced, oral traditions were the main source of information about the past. Much of Botswana’s early history is based on oral traditions. This history is not only about the past; it includes what people say about the present (Parsons, 1999). The older generations passed on their culture to the new generation through oral traditions and imitative practices rather than formal education (Section 4.1). However, it has become increasingly urgent to document oral traditions. Otherwise this information will disappear with the deaths of its holders; hence there is a saying that ‘every elderly person who dies represents a library going up in flames.’
The written language came as a manifestation of colonialism. The old tradition of orality was questioned and the newer, foreign conventions attempted to take its place (Kambyellis, 1997). This has led to clashes with the long running African tradition of orality, a tradition which believed that dialogues are infinitely more interesting than monologues (Achebe, 2003). Rather than human contact and interplay, written language draws people away from each other and into their own separate worlds, but it also brings people all over the globe into contact with each other’s cultures and ideas. While Batswana recognised and resisted the destruction of the traditional society by the colonial customs, assimilation and hybridity still predominated. Beliefs became intermingled, and modern customs became mixed with past myths. This integration of the new customs and cultures does not necessarily mean a resolute forfeiting of everything old.

English is the official language. However, the national language is Setswana, which is understood by about 90% of the population and is a mixture of ‘eight principal’ ethnic dialects. The national language was backed by the assimilationist policy of the ruling party at independence, which wanted to foster one national language in pursuit of building one nation. This assimilation, as expressed by Werbner (2002:676),

...was not an accomplishment wholeheartedly accepted by all — it was not free of opposition, and it was immediately perceived by some non-Tswana to be carrying forward the old tribal pressures for assimilation under Tswana dominance.

To expand on this observation: the minorities struggled to claim respect for themselves, their languages, histories, and ways of living on an equal basis with the so-called ‘eight principal’ tribes. The ruling elite promoted multiracialism in order to develop a unifying national culture (Parsons, 1999). This principle of equality for all has been implemented in a way detrimental to the protection of ethnic and cultural diversity (United Nations Report, 2006). However, the United Nations has since evolved a new thinking that recognises the diversity of the peoples that make up nations, rather than to impose a blind national unity upon people who are varied in language, cultural practices and means of economic livelihood. Therefore, the minorities opposed cultural and linguistic
dominance, which stigmatises them and denies them equal rights of citizenship. Rather, they felt, the government should be promoting multiculturism. As a result of the adopted stand of multiracialism Wilmsen (2002) points out that some minority languages such as Shiyyeyi, Bakgalagadi and Deti appear to have been overpowered by the Setswana language. This example illustrates that the minority languages are diminishing along with their cultures. In other words, a liberal democracy like Botswana’s should treat all languages equally. Experiences from elsewhere show that languages tend to die a natural death if they are not allowed to develop and flourish (Werbner, 2002). “For every language lost an entire set of ideas and traditions that could enrich our lives perishes along with it” (Jensen, 1999:96).

Even in present-day Botswana, minority groups are advocating that their languages be taught in schools and be heard on radio. The United Nations Report (2006:5) “notes with concern the difficulties of many children of these tribes to benefit from the educational curricula on account of linguistic barrier.” The report emphasises that it is no longer acceptable, for the appearance of homogeneity, for cultural differences to be effaced from the public sphere. The minority debate in Botswana has now reached a postcolonial watershed. Never before has there been such public surge in minoritisation; that is, a process creating minorities who actively differentiate themselves from the majority and from each other (Werbner, 2002). This momentum marks a turning point that has been reached, at which there is a recognised shift from one postcolonial working consensus, with the possibility of moving to another. Furthermore, Mazrui (1999) argues that no country has successfully advanced scientifically without significant developing indigenous languages. He cites the examples of Japan and Korea in this respect. Therefore, there is a mammoth task for Botswana to decolonise and develop its indigenous languages.

Language in products can be used to open up a dialogue between designers and users. It reflects how users think and interact with each other. Artefacts speak to users as signs (semiotics). These features are the key repository of cultural values. Artefacts act as information carriers, and this is referred to as product language or semantics. Product
language describes the relationship between the product characteristics and how users perceive them. Artefact usage involves attribution to meaning, and the central role of language in design is to make artefacts meaningful (Krippendorff, 2006). Meaning is based on bodily experience and personal interpretation including social, cultural and biological predispositions (Coates, 2003). The product features convey meaning to users; this meaning is expressed through the use of language, and gives users a sense of identity (Stanton, 1998). Product language can be accomplished by employing metaphor, allusion and historical and cultural references. Visual clues help to explain the intended use or function of a product and help minimise the need for text-based information.

In order to design products that convey cultural values, designers could rely on the use of spoken and non-verbal language (arms and hand gestures, touching, silences, facial expressions, speech inflections and social distance). Users should be actively involved in the design process from the onset. It is through discourse that designers come to understand about themselves, their relationship to each other, their relationship to users and their place in the society (Du Gay et al., 1997). For example, designers come to understand the concerns of their users through verbal communication channels that involve conducting surveys, interviews, protocol analysis, and participatory and focus groups sessions. That is soliciting users’ opinions, feelings, frustrations, and aspirations through their active involvement in the decision making process. These interactions enable designers to learn some of the needs and wants that users cannot voice, but which they express unconsciously through para-linguistic features. Observation of these silent features is fundamental to designers as this gives them an indication of users’ frustrations or excitement at using certain products. Culture, gender and social status influence nonverbal communication. It is only after gathering and analysing such information (kinesics) that designers can endow products with appropriate product features.

In encoding products with appropriate design features, designers can use, for example, colours that evoke appropriate feelings within the society, and which give a simple uncluttered message. The use of suitable colours has extraordinary power over users’ emotions, such as feelings of happiness or illness (Bolwell, 1991). In some cases, colour
awakens latent energies so that users do things faster and more efficiently. Bolwell further argues that whatever the designer decides to do with colour on the product, he/she needs to be aware of its effects because it can be used to achieve fresh and exciting results. The product should be designed in such a way that it conveys an intended interaction within the cultural context (Popovic, 2002).

Language assists designers to convey information about products. Coates (2003) argues that there are three types of information conveyed by products. First, products convey essential information. This information deals with the functions of the product. Second, products transmit collateral information; that is, optional information dealing with enhancing the product’s ergonomic and aesthetic value. It might deal with increasing the speed and accuracy of interpretation. Third, discretionary information deals with the freedom for the product to say anything to capture and stir feelings, passions and urges. Coates advanced several facts on what kind of information designers should aim to achieve in designing products through the use of language (Figure 2).

However, designers should use familiar language in products, to accommodate the users’ diverse languages. Very often, language in new emerging economies does not have the technical terminology or it cannot be directly translated into the language of the intended user population (McCafferty et al., 2004). For example, in Botswana ‘botala’ is used as a general word to refer to both green and blue colours. Wherever possible, therefore, pictograms should be used instead of verbal or printed text to present information in products. This can eliminate the confusion or misinterpretation caused by language use. Any successful product must follow the protocols of the target users; that is, speak the local language (Waymire, 2000). Waymire further argues that usability issues — inefficient use or misunderstanding of a product’s benefits — often indicates disconnection between the language of the user and that of the product’s semantics. Therefore, the designer should make the product semantics as clear and unequivocal as possible so that users understand the message.
In summing up this section, it is argued that while users insist that products perform their essential information task well, they also seek non-essential and discretionary information in each product as a means for broadcasting their personal values, beliefs and attitudes. Products serve as symbols of personal status or social aspiration. Products stir emotions and perpetuate existing values and beliefs by reinforcing them and all these can be expressed by different social classes through the use of language and consumption. The use of language in oral traditions such as in storytelling is an important component of Botswana’s culture and design.

4.3 Folktales
Due to the significance of oral traditions in Botswana’s society (Section 4.1), this section analyses how the art of storytelling through the use of language informs product design. Although there are many other socio-cultural elements in the society such as music, poetry, novels and film, one of the foci of this study has been on folktales and how they can be integrated in designing products (Section 8.3). Within the study, different types of Botswana folktales were analysed in order to extract traditional socio-cultural factors which were transformed into product features that reflect Botswana’s culture (Chapters 8 and 9).

Centuries ago, when the script for writing was not yet developed, Batswana shared their observations and experiences through detailed oral descriptions that were later combined into a series of stories. These stories help others understand what was previously observed or experienced and provide a base for extending to new experiences (Leedy and Ormrod, 2001). All Botswana tales demonstrate the following common characteristics: their curiosity regarding nature, humankind the world around them, and the world that exists beyond. Animals have a prominent role in ancient African people’s daily thoughts, conversations and oral literature because people lived their lives in close proximity to the wild animals (Miller, 2002). Another perspective of the use of animals is that offered by Chan (1987), who states that stories featured animals to satirise tribal events. By using animals, storytellers could make fun of kings and chiefs without fear of retribution. There are different types of stories, including patriotic stories, myths, stories of heroes and
heroines, legends, real-life stories, humour, nature stories, love stories, animal stories, current events, mysteries, adventure stories and history.

Storytelling is one of the most ancient features in Botswana’s culture. As indicated earlier, it has been a way of passing on the traditions and beliefs of the society from one generation to the other, and has been used as a means of maintaining social order and codes of behaviour. These tales were told under the shade of a tree during daytime or around a campfire in the evening, thus providing a source of entertainment, to record the history of the people, and teach principles of life and morality (Okpewho, 1992). Folktales also provide patterns for problem solving (an important feature for design) and give a sense of identity to the people (Boyatzis, 1998; Miller, 2002). Stories inculcate intelligence in children because it is essential for them to defend themselves against the brutal and harmful effects of their environment. Folktales are not just for children; they are ageless, since their messages are relevant across the spectrum of human experience (Tooze, 1995). Furthermore, as Pellowski (1991) observes, storytelling (a) grew out of the playful, self-entertainment needs of humans, (b) satisfied the need to explain the surrounding physical world, (c) evolved from the human need to communicate experiences to other humans, (d) fulfilled an aesthetic need for beauty, regularity and form through expressive language and music and (e) stemmed from the desire to record the actions or qualities of one’s ancestors, in the hope that this would will give them a kind of immortality.

Traditional stories are still relevant to Batswana daily lives. They remind people of their history and heritage and often carry universal life messages that have stood the test of time. Since stories deal with universal life experiences, they can offer enlightening insights into traditions and values (Section 2.1). Folktales are windows into other cultures as well as mirrors of people (Fulghum, 1999; Miller, 2002). Stories are the building blocks of knowledge, and the foundation of memory and learning (National Storytelling Association, 1997). They connect people with their humanity and link the past, present and the future by teaching people to anticipate the possible consequences of their actions.
It is noted that the goal is not to restore a bygone past, but to draw upon the past and create a new future.

**Common characteristics between storytelling and design**

Storytelling is not what most designers do, think about doing, or are usually educated to do (Sametz and Mayhoney, 2003). “Storytelling is rarely thought of as a design tool” (DeLarge 2004:6). According to DeLarge, design might be viewed as a simple conveyance of a story, so that a good design is really just good storytelling. If this is the case, then it is suggested that designers are storytellers. This is a new approach to the way of looking at design — an approach that most designers are unaware of and unfamiliar with. It will require a mindset change for them to embrace this new phenomenon. Though storytelling is not a well known area for design, it is argued that it has common features with the human-centred design process which needs further exploration.

Storytelling and designing both involve the direct contact between the teller/designer and the listener/user. The teller’s/designer’s role is to prepare and present the necessary language, vocalisation and physicality to effectively and efficiently communicate the images of a story/problem. The listeners’/users’ role is to actively create vivid, multi-sensory images, actions, characters and events of the story/problem in their mind, based on performance by the teller/designer and on their past experiences, beliefs and understanding. Storytelling is an interactive performance art form (*National Storytelling Association*, 1997). With the increasing attention given to usability in consumer products, users now need to be involved in the design process. Direct interaction between the teller/designer and audience/users is an essential element of the storytelling/designing experience. The audience/users respond to the tellers’/designers’ words and actions. The teller/designer uses this generally non-verbal feedback (silent language) to immediately and spontaneously adjust his or her ideas, words, tones, images, and pace of the story/design to better meet the needs of the audience/users. This notion was summed up by Okpewho (1992), who observed that the audience also frequently laughs, exclaims, makes comments and does various other things to participate fully in the narrative experience. In this context, storytelling becomes a cyclic process of continual feedback.
and feed-forward (Chapman, 2005). The same cyclic and narrative experience also takes place in the human-centred design process.

Storytelling/design is a co-creative process. The audience/users do not passively receive what they are told; they create images of what they are told, influenced by their experiences and beliefs. This moves people along a relationship- and trust-building path — the result will be communication that connects more directly to constituents/users, by involving audiences/users (converting them from passive viewers to engaged participants) and moves people to desired responses (Miller, 2002; Sametz and Mayhoney, 2003). In support of the latter, DeLarge (2004) concurs that storytelling enhances design practices as well as building trust and relationships with users. This results in a shared understanding and vision between the designer and users.

Both processes are prime vehicles for assessing and interpreting events, experiences and concepts, ranging from minor moments of our daily life to the grand nature of the human condition (Pellowski, 1991). They are an intrinsic and basic form of human communication and an essential part of our experiences. Communication increases the likelihood that the intended constituents/users will find the story/design relevant and compelling, will see their own interests and needs reflected and will make the desired decisions (Fulghum, 1999; Sametz and Mayhoney, 2003). The listener/user experience has to be aligned with the goals of the storyteller/designer. If not, storytelling/design can backfire if stories/design are told or done without consideration of situational relevance and audience/user characteristics.

Storytellers act as culture builders and catalysts for change (DeLarge, 2004). Stories convey the emotions and soul behind the facts that move individuals towards change and improvement (Section 9.3). They are used to facilitate alignment, to structure history and honour the past, and to forecast futures. The same is true for design, as the products created by designers should reflect the past as well as projecting the future and thus creating an enjoyable user experience.
Storytelling and design are viewed as constituting a process — a medium for sharing, interpreting and offering content and meaning of the story/product to the audience/users. They are both spontaneous and experiential and thus a dynamic interaction between the teller/designer and the listener/user. Storytelling/designing emerges from the interaction and cooperative, coordinated efforts of the teller/designer and audience/users (Chan, 1987; Fulghum, 1999).

In everyday practice, the teller/designer needs to master many common principles: emphasis, variety, transition, pacing, pattern, rhythm, balance, proportion and repetition (Sametz and Mayhoney, 2003; McWilliams, 2004; Shepard, 2004). For example, the concept of repetition can be made applicable to product design by repeating the same or similar elements to exert order onto a composition (Luecking, 2002). Repeating not just compositional elements but also specific relationships between those elements can exert a strong unity in a product. This could be attained by repeating certain product features to convey an emotional feeling; for example, excitement, joy and satisfaction (Figure 7). Therefore, repetition can be used as a tool for bringing pleasure. That is, it can be used to offer delight and relieve users of various pressures and tensions both physically and mentally. In stories, this can be accomplished 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 with which users’ can identify easily, and which reflect their culture.

Furthermore, it is observed that storytelling connects the listener and the constituents’ needs, interests and expectations; and the content, execution and interaction of the building blocks of communication. It therefore brings communication alive. It explains the why, how and what, and people become engaged in a dialogue deeper and more enduring than a single transaction — an interaction that fosters a healthy relationship based on commitment, participation, support and trust. This forms a bond between the teller and his/her audience (Chan, 1987; Pellowski, 1991). This is the bond which designers seem not to have with their users (DeLarge, 2004). There is a lot that designers
can learn from the art of storytelling, especially in the field of experience design, which might make products more human-centred and as well as culturally sensitive.

Finally, a good folktale should have beauty of design and pattern, sequence and relatedness. It should stress integrity, sensitivity to that which is good, concern for others, a sense of humour and empathy. Above all, the tale should reveal and communicate the society’s values. All these factors are equally important to the designing experience. Storytelling can be used as a medium for knowledge transfer (DeLarge, 2004). Stories enhance memory, believability and experience, set expectations, gain attention and bring together sometimes related or disparate fields of knowledge to create innovative solutions. In design, the bisociative attraction technique follows the same principle (Chapters 8 and 9). This could be achieved by actively listening to themes embedded in users’ stories, which could lead to improvements in relationships, and present clues that trigger new product development. Stories often contain the seeds of new solutions, or the information that designers need to know to make improvements to existing designs. Information gathered from stories reconnects people to their culture rather than the cold statistics gathered from market researchers (DeLarge, 2004). Often what users tell market researchers they do does not always tally what they actually do when observed in their own context. Therefore, designers should strive to create order and meaning in the form of tangible and intangible objects and experiences that are stories, at least in some respects.

4.4 Summary

This chapter has intertwined the cultural elements of education, language, folktales and their applicability to design. Language gives people identity whilst the transmission of education depends on language. In present-day Botswana, everything hinges on education (formal and informal) for the transmission of appropriate values across all levels of society. However, educational institutions should be continuously evaluating their programmes in order to respond to both the local and global contexts. It is through the use of language that designers can communicate the society’s norms and values in products they design. This can be achieved by using familiar language that can be easily
understood by users. It has emerged that oral traditions (e.g. storytelling) have great potential to be used as a design tool because of their commonalities with the design process. The next chapter interlinks the concepts of culture and design.
Chapter 5

DESIGN AND CULTURE
5.0 Introduction
This chapter explores and merges the relationship between the concepts of design and culture. These two concepts complement each other to the extent that one is inconceivable without the other. Design does not take place in isolation but is embedded in users’ culture. Evidence from the literature (Cross, 2002; Csikszentmihalyi, 1996; Science and Technology Policy, 1998) suggests that integration of culture in designing products might lead to product innovation and product acceptance. Therefore, it is important to examine what constitutes an innovative design concept, and which design features are considered to be the main components of an innovative design concept.

5.1 Culture's influence on design
Early links between culture and design became apparent in the domain of social anthropology, where civilisation was evaluated through the evolution of objects, and was traced through the cultural characteristics left on those objects. Some researchers (De Souza and Dejean, 1999) imply that culture is linked with tradition as opposed to the notion of design, which is associated with modernity and innovation. Reconciling the two concepts is a daunting task. However, culture generates diversity and it is naturally revealed in all human action, including the products that people design. Moreover, it is argued that design shapes the culture and lifestyle of modern society. Observing the design of artefacts produced and consumed in a society often reveals the cultural situation and the people’s lives, education, needs, wishes and fears.

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 and Cooper, 2003).

Cultural rights have been the focus of much debate in Botswana since the decolonisation movement following World War 2. A theory is advanced by Jensen (1999) that the war of the future will be based on culture and the victory will be won by the culture that sells its values and ideological foundations to the adversary. Buchanan (2001) argues that designers should focus on cultural rights. From a postcolonial perspective, the challenge is to develop ever-increasing respect for cultural rights in the world system in such a way that the world system itself evolves in accordance with cultures’ highest, wisest and most enduring values rather than the basest and crudest practices (Schafer, 1998). In product design, the goal of cultural respect can be achieved by incorporating the historical and aesthetic values of users (Moalosi et al., 2005a). The challenge is to understand what and how cultural norms and procedures can be integrated in product design.

The author argues 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; De Souza and Dejean, 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. 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 in a vacuum, but in the interaction between users’ thoughts and the socio-cultural context (Moalosi et al., 2006). It is a systematic rather than an individual phenomenon. This notion can facilitate product acceptance and results in users’ satisfaction. Satisfaction is derived from products that provide users with functionality, usability, interaction, experiences and pleasurability (Jordan, 2000).
Each culture evolves 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 might pave the way to the diversification of design concepts, and this would facilitate product innovation. In Chapter 2, it has been demonstrated that culture can be implicit and explicit. Designed products, just like culture, can reveal visible attributes (functional and aesthetic) and non-visible (such as emotional) attributes. Above all these attributes and factors should be symbolic to the society.

Furthermore, cultural issues should be integrated in the teaching of science and technology (Science and Technology Policy, 1998). 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, 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.

Culturally orientated products can be used to mark the boundaries between groups, to create and demarcate differences or commonality between figurations of people (Featherstone, 1995). However, Featherstone did not elaborate much on this point. It is apparent that utilities in all cultures are symbolic; products are in effect doubly symbolic
in contemporary societies. Symbolism is consciously employed in the design and imagery attached to the products in the production process, and symbolic associations are employed in using products to construct differentiated lifestyle models.

In terms of product design, identities will never dissolve completely, even in the global world. To expand on this argument, when products are exported, a glimpse into the cultural identity of their country of origin is embedded in them. However, Zec (2002) argues that with increasing globalisation of markets and competition, there are growing multicultural influences on national identities. That is, globalisation is leading to greater similarity of perception and lifestyle and in some cases identity. It is observed that this occurs whenever global trade leads to a greater uniformity of product culture. It is apparent that as users surround themselves with products, they change their way of living. Wherever users familiarise themselves with and use the same products, their lifestyles become more similar (Zec, 2002). This implies that cultural differences seem to become less important as users grow towards a universal, global and homogeneous culture. However, Zec’s claims are not sustainable, as his notion undermines users’ cultural preferences and is largely misleading. “Cultural differences are here to stay and they will force designers to adapt and to differentiate their products for different cultures” (Van Raaij, 1997:269). No matter how hard people try, it is impossible for them to divest themselves of their own culture, for culture is the medium through which they interact. The set of norms, values, opinions and behaviours constitute everyday life and consumers’ culture. It could be argued that if values and norms differ, designers have to make sure that the product characteristics and benefits are adapted to these values.

In the field of design, the idea of a neo-liberal form of globalisation should be strongly contested (De Souza and Dejean, 1999; ICSID, 2002). Globalisation is seen as a force that must be opposed because it results in unification of people’s 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 in defence of national and regional identities, and manifestations of the fear of mixing of races, religions, customs and habits (Van Raaij, 1997). It is apparent that contacts in some cases do not necessarily generate a cultural standardisation but rather they often provoke an exacerbation of differences (Chapter 2).

Universality is a value that is reminiscent of the industrial era, but is 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 is revealed 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 that users are demanding that specific needs be satisfied with more localised solutions (Aula et al., 2003). Electrolux 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.

Design at Sony is close to the cultural practices and preferences of their target user groups. This enables designers to ‘read the signs on the street’ thus monitoring people’s behaviour and preferences as well as concentrating on the function and form of the product (Du Gay et al., 1997). Sony is not simply concerned with creating functionally
Apposite and intelligible products but with specifying design that symbolises subjects and meanings beyond the ones that are obvious. The former Head of Sony Design Centre (Yasuo Kuroki) is quoted by Du Gay et al. (1997:70) as saying, “the early Walkman model clearly drew upon Japanese tradition in that it used simple colours (especially black) and had a linear form — reflecting traditional ‘tatami’ mats with their straight lines.” This demonstrates that Japanese designs draw upon their cultural values of miniaturisation, simplicity of aesthetics and attention to details. However, Japanese design has not remained static throughout time, but has embraced other foreign cultural values, especially the American and the German conceptions of design.

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, powerful visual design, information architecture and design ideas. “Technology is not a good traveller unless it is culturally calibrated” (Kaplan, 2004: xiv). This means designers need to take into consideration the technological, aesthetic, anthropological 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, Batswana 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.

Design can be linked to culture through the incorporation of cultural values in products. Cultural values shape the way people behave within their community. The embodied values in products also play a part in regulating people’s attitudes within the society. The values integrated in products give users their cultural identity. Cultural values can be incorporated in products by designing appropriate signs or features which represent those values.

Cultural values provide designers with a rich and varied set of materials that inspire new design ideas (Gaver, 2001), and which are a way of finding connections with users’ traditions. Gaver claims that they are specifically concerned with exploring how future technologies can support the traditional values that motivate and drive the adoption and use of new technology. Designers need to recognise that cultural values assist in moulding users’ behaviours and attitudes, and the products they design are likely to be uninteresting if they fail to consider users’ values. The family is the most important symbol and unit of Botswana’s society. All families are encouraged to ensure effective transmission of cultural values to children and it is through the family that children receive love, care, security and support (Makwinja et al, 2000). This point is underscored by the National Policy on Culture (2002), which states that families should reinforce the concept of the extended family system, with emphasis on the advantages that society derives from this reform. This is the main way in which children are socialised; that is, learning the ways of their community.

In order to understand users’ real experiences, Gaver et al. (2004) introduced a design-led approach called ‘cultural probes.’ Cultural probes in design provide an engaging and effective way of opening up an interesting dialogue with users by eliciting and conveying information about users’ emotional, psychological and social habits. The probes could be in the form of postcards, a camera, a questionnaire, a diary book or maps. The researchers leave them behind with the participants and wait for the returns of fragmentary data that
show the participants’ lives and thoughts over time. Through the probes, researchers have an opportunity to observe, read or listen to others’ real-life stories. This information allows designers to build semi-factual narratives from which design proposals emerge. Consideration of cultural values allows designers to examine themselves, to see their task in perspective and to question some of the narrow assumptions they may have inherited about their cultural role in the society. However, this concept fails to go a step further, on how the collected data from participants can be interpreted and integrated into designing cultural-orientated products. Lee (2004) cautions that major methods of cultural design are only limited in a designer’s personal intuition, but such an approach should extend beyond this framework.

Memorable design does not always depend on a clever idea or advanced micro-electronics, but can be born out of an honest understanding of human sensitivity and values (Dormer, 1996). Designers who focus on the intelligence of their users rather than the intelligence of their technology will produce the innovations that really matter (Ross, 2002). Ross argues that 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. In this case, designers become agents of cultural change. Product innovation can bring drastic changes of social values, shocks of reorganisation and restructuring, the introduction of new socio-economic restraining mechanisms and shifts in social conditions (Szántó, 2001). Innovation represents a social value which was unknown before. It is often very different from the common system of values that a society is accustomed to. Nonetheless, what constitutes an innovation or novel design concept will be examined in the next section.

5.2 Constituents of a novel design concept

Novel design concepts can be categorised as inventions or innovations. An invention is the creation of something completely new to the world which is not based on the development of an existing product, process or system (Jones, 1997). It is posited that although an invention may be present, it is not implicitly required and it is the capability to harness an invention, develop it and incorporate it within an innovative product that is
the key commercial issue. Innovation is not only a matter of having the imagination to
dream up new concepts and the ability to solve identified problems, but also having
knowledge of how to turn the resulting conceptual solutions into well designed and
developed products.

On the other hand, an innovation is the act of changing, or an alteration of what is
established, by introducing new elements or form (Walsh et al., 1997; Jones, 1997).
Successful innovation is about creating social, cultural or economic value. Without any
normative measure of value, it is impossible to translate how users will benefit.
Innovation occurs at two different levels: as a breakthrough or incrementally. A
breakthrough or “high innovation” is mostly associated with jumps, or significant
changes in a product, process or system. It is usually driven by either technology or
design. In some cases, it incorporates a new invention. However, Jones (1997) cautions
that this approach is considered risky even though there are great rewards to be gained.
On the other hand, incremental or “low innovation” is the gradual improvement of a
product through a series of steps or product variants. It is mostly characterised by some
small changes in the development of an existing design. This is the most common
innovation approach because it is safe, and designers steadily improve the original
breakthrough model. However, both kinds of innovation require the designer to (a)
challenge the status quo, (b) have an understanding of and insight into the users needs
and (c) develop imaginative and novel design solutions.

There are two major sources of design concepts. Design concepts may be pulled by the
people’s needs, demands and desires; alternatively, they may be pushed by new
technology generated by deliberate scientific research or serendipitous discovery (Brooke
and Mills, 2003). The application of indigenous or contemporary technology could
improve the effectiveness and efficiency of the design concept. For example, the effective
use of micro-electronics, simulation and optimisation technology could facilitate design
innovation if they are blended seamlessly within the product development cycle.
“However history shows us that technological innovation is a strategically important
condition but, if it is offered to a society that is culturally, socially, and economically
unprepared to accept it, its value will be lost…” (Coles and Norman, 2005:161). This means that the success of any design innovation should be in congruence with those of social groups in that particular culture (Section 3.1).

A novel concept has been described in a broad context by Kruger and Cross (2001) and by Stacey et al. (2002). This is a means of producing something that is not only fresh and different, but which remains true to the company style and brand image, and meets both users’ needs and expectations and the company’s commercial and manufacturing requirements. From this description, it is deduced that a novel concept should be (a) new, (b) different, (c) have a distinct style and image and above all (d) meet users’ needs and expectations. From a business point of view, that concept should also (e) have a commercial value and (f) be in a position to be manufactured. The concept is said to be novel if it has never been seen, heard of or used (Brooke and Mills, 2003). These factors are fundamental in achieving a novel design concept.

A novel design concept comprises technical excellence and visual harmony (Kinner et al., 1995; Walsh et al., 1997). This involves balancing multiple considerations of a product’s function, manufacturing, conformance to standards and appropriate choice of materials. It is underscored that materials often form the basis for product innovation; for example, the use of “smart” materials. The choice of materials is dictated by the design; sometimes, it is the other way round, where the new product is brought about by using a new or different material. On the other hand, visual harmony includes two key properties: unique aesthetic features and users’ requirements (Marzano, 2005; Turner et al., 2005). It is observed that the concepts should appeal to target users and appear different, and should attract attention while having the right forms of aesthetic appeal, cultural significance and providing a better quality of life. By observing and analysing social patterns, designers can better achieve innovative solutions that tie the users emotionally to the product and appeal to them on a visceral level. Human-centred design can be an invaluable component of innovation (Section 6.2). A novel concept should be influenced by the broader culture that defines spaces of acceptable products (Cross, 2002; Stacey et al., 2002; Turner et al., 2005). Therefore, culture is considered to be a catalyst for generating
novel design concepts. This idea is supported by Waymire (2000:74), who states: “in the quest for innovation, experience and deep knowledge concerning specific domains of human behaviour and culture can be a source of breakthrough design.”

Creativity is defined as a significant aspect of the overall design concept. It is argued that the designer’s aim normally is to achieve a high quality design, with newness or originality in comparison to existing products within the same cultural context. The “surprising parts” of an idea drive the originality streak in a design (Dorst and Cross, 2001). However, Dorst and Cross did not elaborate much on what constitute the “surprising parts”. It is suggested that these surprising parts could be influenced by technical, aesthetic or cultural factors to ensure newness of the concept. On the other hand, human factors are another important source of novel concepts. Human factors cover a wide spectrum of physical, cognitive, emotional, social and cultural aspects of product design and development.

Novel designs should be sustainable; that is, they feature the addition and balancing of social and ethical issues along with environmental and economic factors (Turner et al., 2005). Sustainability includes considerations of effects on pollution, social utility and value, exhaustion of materials and energy, and the production of user-friendly products. Charter and Chick (2002) propose a four-step model to achieve significant resource and energy reductions: (i) re-pair — dealing with end-of-life solutions, (ii) re-fine — which is eco-efficiency (reducing resource conservation whilst adding value and reducing costs), (iii) re-design — existing products should incorporate environmental factors, and (iv) re-think — use systematic infrastructure to enable the cyclical flow of resources and energy within a product system. A six-step model to address environmental issues in product design is proposed by Cooper (2003): (i) materials (using less materials), (ii) dematerialisation (designing multi-functional products), (iii) design for disassembly (easy to take apart, repair, upgrade), (iv) energy (minimising energy use, use of renewable energy), (v) life extension (productive use of parts or materials) and (vi) transport (minimising energy for transportation). Novel design concepts should have the potential
to be recycled, and their components to be reused, remanufactured and have restrictions on their disposal (Brown and Wilmanns, 1997).

Indigenous knowledge is another important dimension that can be used in stimulating product innovation and acceptance. Indigenous knowledge refers to the large body of knowledge and skills that has been developed outside the formal educational system (De Guchteneire et al., 2002). It is embedded in culture and is unique to a given society. Indigenous knowledge is based on experience; has often been tested over centuries of use, and adapted to local culture and environment; and is dynamic and changing. In a study conducted by De Guchteneire et al. (2002) in several African countries, Botswana inclusive indigenous knowledge has been found to have the following characteristics: (a) it is a source of innovation, (b) it has a sustainable effect and (c) it has the potential to be a source of inspiration to others. The National Policy on Culture (2002) implies that research should be conducted on how traditional technology can strengthen national cultural industries. The policy recognises that Botswana is endowed with talent in this area, but the level of development is still very low.

In summary, a novel concept should be original, appropriate and unobvious (Howard et al., 2006); appropriate, valuable and desirable (Tan and McAloone, 2006); and purposeful, resource-effectiveness and novel (Chakrabarti, 2006).

Table 2 summarises the constituents of a novel design concept. In deciding what a novel concept is, there are bound to be some elements of subjectivity, and it is determined by cultural considerations. It is similar to the notion of “beauty being in the eye of the beholder”. However, many design concepts will deliver more than one of the novel features (Table 2), and at different degrees.
Table 2 - Constituents of a novel concept

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aesthetic values</td>
<td>How the design concept looks, feels, sounds, tastes or smells in relation to users’ culture. Aesthetics is influenced by beauty. Beauty can be achieved by use of style, shape, form, symbols, repetition of features that correspond to the cultural set up to convey humour or joy. Moreover, appropriate use of traditional motifs, colours, patterns that evoke appropriate emotional feelings within the cultural context can result in aesthetically appealing designs.</td>
</tr>
<tr>
<td>Functional values</td>
<td>Refers to the design concept’s primary operating characteristics and breaking new ground in terms of performance levels, efficiency, purpose, affordability, quality, durability and ease of use.</td>
</tr>
<tr>
<td>Indigenous knowledge</td>
<td>A large body of knowledge and skills that has been developed, tested and adapted outside the formal educational system.</td>
</tr>
<tr>
<td>Creative values</td>
<td>Product’s conceptual differentiation, uniqueness, newness and originality from existing cultural practices and forms.</td>
</tr>
<tr>
<td>User values</td>
<td>Meaningful (appropriate) design concept that promotes pleasure, satisfaction and cherishability from a user viewpoint.</td>
</tr>
<tr>
<td>Human factors</td>
<td>Representation of physical, cognitive, emotional, social and cultural factors to support users’ culture; for example, consideration of users’ physical differences, cultural and social values as well as emotional and cognitive attributes.</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Balancing of social and ethical issues along environmental and economic aspects. Considerations should be given to effects on pollution, exhaustion of materials and energy, designing environmental user-friendly concepts. For example, does the concept facilitate culture preservation, and eco-design? Does the design concept pose any environmental concerns to users and their surroundings?</td>
</tr>
<tr>
<td>Technology values</td>
<td>Application of indigenous or contemporary technology to improve the effectiveness and efficiency of the design concept (e.g. use of smart materials, micro-electronics, simulation and optimisation technology).</td>
</tr>
</tbody>
</table>

A novel design concept entails designing products that combine function with materials so that they can be produced efficiently. It also means combining cultural visual harmony with function so that products can resonate with users’ deep emotions. Above all, environmental factors and conformity to standards need to be taken into account. The
main attribute is to discover which set of factors prospective users would value, and to identify a product configuration embodying them at an appropriate price; this is what defines a successful novel design concept.

5.3 Summary
This chapter has explored the relationship between design and culture. The two concepts are intertwined and they influence the type of products created by designers. That is, designers are not only tasked to make products functional but to make them cherishable and pleasurable to use. It is posited that design produces meaning through encoding artefacts with symbolic significance, thus giving functional artefacts a symbolic form. Therefore, designers are the key cultural intermediaries as they actively promote consumption through attaching to products and services particular meanings and lifestyles with which users might identify. It has emerged that there are various factors which contribute to the novelty of a design concept, and these may range across aesthetic, functional features, indigenous knowledge, creativity, sustainability, technology features and human factors. These features might assist in making product innovation within Botswana’s context to reflect the users’ culture. The next chapter will analyse the applicability of the human-centred design approach to design in Botswana.
Chapter 6

HUMAN-CENTRED DESIGN AND ITS APPLICATION IN BOTSWANA
6.0 Introduction

When we dream alone, it is a dream. When we dream together, it is no longer a dream but the beginning of reality (Denning, 2001:71).

This chapter analyses the concept of human-centred design in general and then narrows it to Botswana’s design context. The main focus of the human-centred design process is to put the user as the pinnacle of all design activities. That is designing with users rather than designing for users. This process assists designers to design useful, usable and pleasurable products. Designers in Botswana have not yet embraced this approach in their practice, resulting in products that do not respond to users social, emotional and cultural needs. Despite all the advantages of this approach, it has some limitations that need to be taken into consideration at the conceptual design stages.

6.1 Human-centred design

Human-centred design has been defined as a methodology that puts users at the centre of the design process (Norman, 1988; Buchanan, 2001). It is an approach based on the needs and interests of users with special attention to making products usable and understandable. Human-centred design is based on the premise that design is meaningful only when the focus of its activities and outcomes accommodates the largest possible number of people inclusive of their diversity (Moalosi et al., 2004). It focuses on how people actually interact with specific products and designed environments, rather than prioritising product form and appearance. Furthermore, the approach goes beyond design’s traditional focus on the physical and cognitive needs of users, and encompasses cultural, social and emotional factors. It has been noted that the above definitions emphasise the quality of the relationship between the person who uses the product to achieve some result and the product itself. The fundamental features of this relationship are effectiveness, efficiency, satisfaction and pleasure. The user-focussed design concept, according to Stoll (1999), has two characteristics: it satisfies people’s needs in the most optimal way and it is superior to all competitive products with respect to product characteristics.
In short, the primary objectives of human-centred design, as argued by Rouse (1991), are (a) that the design should enhance a human ability; that is, user interests should be identified, understood and cultivated; (b) that it should help overcome human limitations; for example, errors need to be identified and appropriate compensatory mechanisms devised; and (c) that it should foster user acceptance; that is, user preferences and concerns should be explicitly considered in the design process. From these varied definitions, it is proposed that human-centred design is a multi-disciplinary approach which is driven by users’ needs and expectations, and at the same time involves users at every stage of the product development process in pursuit of creating useful, usable, engaging, pleasurable and desirable experiences.

6.2 Human-centred design process

There are many models that represent the human-centred design process. Some are cyclic and others are iterative, but all end up with the same features. According to the *International Standards Organisation 13407* (1999) human-centred design processes for interactive systems consist of the following activities: (a) understanding and specifying the context of use that involves the characteristics of the intended users, the task users will perform and the environment in which the users will use the product, (b) specifying the user and organisational requirements, expressed in terms of effectiveness, efficiency, satisfaction and allocation of function between users and the product, (c) producing designs and prototypes, to be accomplished by creating simple mock-ups, and (d) carrying out user-based assessment, involving the evaluation of designs against user requirements, preferably by testing them with representative users. This activity comprises the evaluation plan, data collection and analysis, reporting the results and making recommendations for change. One should iterate this activity until the usability and cherishability objectives are met.

However, this model is flawed because it also considers users’ feedback only at the last stage, just like the Rural Industries Innovation Centre design model (Section 6.4). This flawed concept has been observed by Rouse (1991), Maguire (2001) and Bonner and Porter (2002), who point out that traditionally, user-feedback in the development of
consumer products is not included until the latter stages of the design process; only at this point are users’ opinions sought on product variants. Carrying out user assessment as this stage creates problems because it becomes very expensive to incorporate users’ inputs in the newly developed product. However, with the increasing focus on usability and cherishability in consumer products, users now need to be involved in the design process at an early stage.

The purpose of this study is to integrate socio-cultural factors into the existing design processes in the early stages. It is anticipated that this might strengthen the design process, which will ultimately lead to designers designing better products for users. For example, it is observed that socio-cultural factors should be considered at the user needs-analysis stage. The human-centred design approach should start by capturing physical and cognitive needs of users’ (Stanton, 1998). The major problem with Stanton’s approach is that it has omitted other vital considerations such as social, cultural and emotional human factors. It is argued that all these considerations should be analysed at the user-needs stage. This might ultimately lead to an effective design process which includes user involvement, interaction and multidisciplinary collaboration. The participation of end-users is the main strength of human-centred design as they provide insight into the problem and this enhances acceptance of the end product (Maguire, 2001). The approach requires that users should be actively involved throughout the design lifecycle. Above all, this calls for designers to conduct immersive user research by watching users carrying out tasks in their own environment and asking open-ended questions about their actions, thoughts and feelings. This process is often accompanied by video-recording users in the social context for later analysis and presentation to the design team.

The design team should be multi-disciplinary, thus taking into account all knowledge and expertise required to produce a usable and pleasurable product. The cross-functional team might include market researchers, psychologists, anthropologists, social scientists, users, and ergonomists (Stoll, 1999). The purpose of the team approach is to ensure that all needed information is readily available, as design decisions are made throughout the
course of the project. Cross-functional teams are viewed as enhancing design creativity due to cross-fertilisation of thought processes, behaviour, and functional skills. This team approach allows the development process to occur in non-linear iterations that bounce back and forth between disciplines, so that design decisions are fully informed. Such an approach provides a unifying framework and at the same time reduces the wastage of conflicting initiatives. Without this approach, the design is likely to proceed in a more linear fashion (Section 6.4).

The design process proposed by Jordan et al. (1998b) pays no attention to the main user tasks that need to be identified at the conception stage. It is argued that the user tasks should include socio-cultural, physical, emotional and cognitive human factors. The user requirements can be analysed early, when the design is still relatively fluid. It is envisaged that this type of design will lead to quality user experiences that add value to products and to user’s lives. This argument has been developed in Section 9.3 and Figure 12.

The field of human factors should extend beyond the usual physical and cognitive fit between products and users, to embrace social and cultural considerations, personal needs, desires and aesthetic responses (Stanton, 1998). It is observed that human-centred design invites users to the design table where they have traditionally been excluded. It seeks to bring the user closer to the designer, often reducing the step function of market research, which has tended to act as a barrier between the designer and the user (Storer and McDonagh, 2002). In view of all these, the designing activity has been reshaped because it implies that ordinary people can contribute to the design process from the start. This methodology involves users in data gathering instead of relying on the designer’s assumptions and experiences. The designer’s perception has not been discredited, but only relocated to a more appropriate position. It can now be used to develop tools for understanding and facilitating creativity.
6.3 Usability and designing pleasurable products

A criticism that is often levelled at usability-based approaches to design is that they encourage those involved in the product creation process to take a narrow perspective of the user (Jordan and Junginger, 2002). Traditionally, usability approaches have tended to focus on fitting the design of a product to the cognitive and physical aspects of the user. This has led to an emphasis on design for effectiveness and efficiency of use with little attention to emotional and hedonic aspects of product design. Part of their argument is that functionality and usability in products have reached a level of maturity such that designers now need to look for other ways of enhancing user experiences in order to keep a competitive edge. Therefore, a contemporary definition of usability embraces not only effectiveness and efficiency, but also emotion and pleasure with products. This assists in defining requirements in ways by which products should support and affirm the user’s lifestyle. It is proposed that contemporary approaches to usability should consider users holistically, looking, for example, at users’ fears, values, hopes, dreams and aspirations.

This can be achieved by dividing users’ pleasure into physio-pleasure, psycho-pleasure, socio-pleasure and ideo-pleasure (Jordan, 2000; Jordan and Junginger, 2002). The benefits associated with pleasurable products include an emotional benefit, which is connected with how a product affects the user’s mood; for example, excitement, fun, anger or satisfaction (Jordan, 1998a). Hedonic benefits consist of sensory and aesthetic pleasures associated with products. Practical benefits accrue from the outcomes of tasks for which the product is used. It is recommended that cultural benefits should be added to the above benefits. Cultural benefits could be used in reflecting users’ ways of life in their habitat and in the formation of their social identity.

For designers to attain these benefits, they need to consider users’ hierarchies of needs and information. Figure 2 outlines information and needs that are required by designers in this task. It is posited that people need products that perform appropriate functions and display essential information about the purpose of the product. At the same time, they need products that are easy to use (usable) or transmit collateral information. Moreover, users require pleasurable products that bring emotional, hedonic and practical benefits.
Pleasurability is rooted in culture (Norman, 2002). It can be accomplished when users’ cultural needs and attributes are seriously taken into account in the design process. The author suggests that the last stage (Figure 2) should be referred to as ‘cherishability’. This stage requires designers to design products that are functional, usable, pleasurable and cherishable to use; that is, products that can be treasured and kept for a long time for their personal symbolic and sentimental value. This could be attained by the consideration of social, emotional, cultural, cognitive and physical human factors. Coates (2003) refers to this stage as “discretionary information”. This stage should capture and stir feelings and emotions about the product within the socio-cultural context.

![Figure 2 Users’ hierarchy of needs and information in human-centred design (after Jordan, 1998)](image)

Usability can then be generally defined as a measure of the quality of a product or system from the users’ point of view. It means focussing on users, and allowing the users to decide when a product is easy to use and useful. Usability involves the designer learning to know the users and understand their needs so that the users’ point of view is properly taken into account in the design phase (McDonagh-Philp and Bruseberg, 2001). However, Galer et al. (1992) and Dix et al. (1993) broadly define usability as a user-driven product requirement, depending on a series of conditions. These conditions represent the rudiments for a clear understanding and evaluation of usability: (a) the physical and logical characteristics of the product, (b) the characteristics of the users; for
example, cultural context, habits and preferences, (c) the characteristics of the tasks and (d) the impact on the physical, social and organisational environment. Furthermore, the five E’s of usability as suggested by Nielsen (1993) and Alexander (2000) include:

1. Effectiveness — this includes (a) completeness: Was the task fully completed? Were the user's goals met? (b) accuracy: Was the task completed successfully? Did the user get the right or correct result? How well was the work done?

2. Efficiency — this includes (a) speed: Was the user able to complete the task quickly? (b) effort: Was the user able to complete the task without undue cognitive effort? This stage is equivalent to what Jordan (1998) referred to as experienced user performance.

3. Engaging — this includes (a) pleasure: Did the user have a pleasant experience when working on the task? (b) satisfaction: Was the user satisfied by the way in which the application supported her/his work?

4. Error tolerant — the user interface should be designed to minimise the number and severity of errors and should allow a quick error recovery.

5. Ease of learning — the user-interface needs to allow a user who has never seen it before to learn to use it quickly and to succeed in accomplishing basic tasks.

In addition to the above list, Alexander (2000) adds a sixth item: accessibility. The interface needs to be accessible to a wide range of audiences. In contrast, Dix et al. (1993) and Stanton and Barber (1996) suggest that usability can be divided into eight factors: effectiveness, flexibility, learnability, perceived usefulness or utility of the product, task characteristics, attitude, task match and user characteristics.

Usability evaluation should not be thought of as a single phase which is conducted at the end of the process. Ideally, it occurs throughout the design cycle, with the results of the evaluation feeding back and generating modifications to the design. Usability evaluation methods are basically divided into empirical (involving participants) and non-empirical methods (no participants). The three main goals of product evaluation as suggested by (Stanton and Barber, 1996) are (i) to assess the extent of the product/system’s
functionality, usability and cherishability, (ii) to assess the effect of the interface on the user and (iii) to identify any specific problems with the system.

It is important for designers to know the purpose of the evaluation that they are to undertake. It could be argued that evaluation is needed for developing a new concept, evaluating initial concepts, requirements capture, testing a design and evaluating a finished product. However, the following factors distinguish different techniques and help designers to make an appropriate choice of the method to be used: (i) the stage in the design process at which the evaluation is carried out, and the style of evaluation; for example, laboratory studies, field studies and participatory design, (ii) the level of subjectivity or objectivity of the technique, (iii) the type of measures provided, (iv) the information provided, (v) the immediacy of the response and (vi) the level of interference implied and the resources required.

6.4 Benefits and limitations of human-centred design

The benefits of usable and pleasurable products include some of the following as identified by Wang (1997) and Maguire (2001): Human-centred design (a) leads to increased productivity; that is, users concentrate on the task rather than the tool which could be causing a lot of problems, (b) reduces errors, (c) leads to reduced training and support, and yields products that are easier to use and require less training, less user support (less documentation cost) and less maintenance, (d) enhances learning and user experience. Ultimately, all these lead to an improved acceptance through the trial and evolution of new services and products before a full-scale launch. The approach enables an increased accessibility of products and services to a range of users (for example from an able-bodied to a disabled community).

In addition to the above benefits, human-centred design products are viewed as having an improved quality, which makes them more competitive in a market that is demanding usable and pleasurable systems. Furthermore, other benefits include savings in developmental costs and time; increased trust in the product, as users are retained and new users are attracted; and increased job satisfaction for both the employer and
employee, resulting in increased motivation and reduced stress. Human-centred design means relieving users of their frustration, confusion and a sense of helplessness (Norman, 2004), and helping them to feel in control and empowered.

Despite these benefits, this approach still has its limitations. Most scholars, for example Rouse (1991), Stanton (1998) and Maguire (2001), pay insufficient attention to the fact that this methodology has some restrictions. There is a problem in involving users in new innovative technologies: users for these technologies are not yet known, and therefore cannot be involved in the development process (Korpela, 2002). In this case, innovative technologies refer to technologies that are either not yet realised at all, or technologies that may be realised in a technical sense, but which are not part of the established social structure. Examples include interactive television and e-commerce software. These kinds of products are realised through the technology-centred approach whereby the designer’s expression of creativity is at the centre of the process.

The idea of user involvement is to engage people who are representatives of the assumed future users. However, if user requirements are fairly vague, it is difficult to determine who could be a representative of the future user. This creates a dilemma. If the scenario is still uncertain and it does matter which groups are going to be involved, the identity of the groups would remain uncertain. This condition is prone to outcomes which may not prove to be very reliable.

Potential users would not be willing to make an effort to participate in projects with uncertain outcomes and to cope with not yet fully determined technologies. Moreover, potential users rely on their previous work experience to contribute to the innovation process. If the new product is an invention, it becomes difficult for users to contribute fully because this is outside their experiences. This point of view is shared by Norman (2004), who states that one cannot evaluate an innovation by asking potential users their views. This requires people to imagine something with which they have no experience. People find it difficult to articulate their real problems. Even if they are aware of the problem, they do not often think of it as a design issue. It is not possible to accurately
predict user performance in future situations (Popovic, 2002). People do not react until the situation occurs; it is context and environmental conditions that trigger their actions.

However, even if all the design problems are addressed, success is not guaranteed. In spite of this danger, even if the best laid plans are suspect, by having put everything in place, the risk of failure has been reduced and there are better prospects of success (Moalosi, 2000).

6.5 Critiquing the inadequacy of human-centred design in Botswana

In Botswana, there are two industrial design research centres funded by the government which have been tasked with developing commercial products. One of these organisations is the Rural Industries Innovation Centre (RIIC). This centre has been charged with the responsibility of improving the living standards for Batswana through the development and dissemination of appropriate technologies and the provision of suitable technical training, and agricultural and commercial services (RIIC Annual Report, 2003). RIIC also adapts relevant technologies from other countries for local production and dissemination, rather than “reinventing the wheel”. Imported solutions to local problems in some cases have proved unworkable because of (a) cost, (b) the total alienation of the solution from the reality of the problem, or (c) a combination of both (Science and Technology Policy, 1998). The same problem has been raised by Chapanis (2004) and discussed in Section 3.3 — that technology should be culturally-calibrated for it to respond adequately to users needs. Therefore, it is important for RIIC to adopt and create the right infrastructure to indigenise imported technologies. The centre’s main mandate is to identify and develop technologies geared to employment creation and use of renewable energy.

Since its inception, RIIC has developed and adapted over fifty different technologies. These include bakery, building, leather and underground water-lifting technologies, and agricultural implements. Some of the technologies are no longer manufactured due to (a) failure to perform as expected, (b) failure to penetrate the market and (c) market saturation. Out of the fifty, only twenty-two are being manufactured. This is not a
common situation and it needs to be corrected because a lot of resources are being wasted. RIIC’s problems stem from following a linear design process which does not have provisions for a cross-functional team. Chanda (2000) states that product design specifications are compiled following the approval of the feasibility study report by the management, sectional and unit managers. These specifications are meant to address the identified needs, and are used to prepare a conceptual design. These designs are solutions that seek to satisfy the requirements as set out in the product design specifications. The different conceptual designs are evaluated and the best one selected. The selected conceptual design is optimised and developed into a detailed design. The outputs of a detail design are design drawings that identify material specifications for both bought-in components and processed components. These technical drawings are then passed on to the Research and Development workshop for the manufacture of a prototype. The manufacture of the prototype is achieved using the detailed design drawings. Once the prototype has been manufactured, trials are conducted to ensure that it satisfies the product design specifications. This is done prior to subjecting the prototype to any prolonged tests. If the prototype has passed the trials, test parameters for further testing are drawn up. The test parameters cover the following factors: performance, durability, user acceptance and safety.

The design process demonstrated by Chanda (2000) is a traditional linear one, which recognises user input during the testing stage to find out their acceptance and usability of the design. This kind of testing is done too late in the design process, and leads to inappropriate designs and wastage of financial and material resources. In design, as in any other problem solving process, it pays to analyse the problem before creating the solution. It is better to use 10% of the resources to find out how to use the remaining 90% properly than to use 100% of the resources the wrong way (Friedman, 1997). One of RIIC’s successful products — the sorghum dehuller and hammer-mill — was significantly improved with the assistance of one small micro and medium enterprise: Precision Engineering and Turning (Chanda, 2000). It could be concluded that RIIC is “designing for users” but not “designing with users”. Why does RIIC not embrace the human-centred design process so that such companies can contribute fruitfully at an early
design stage? What is problematic about the current pace of innovation is that there is little discussion of the users’ well-being (Margolin, 2002). Furthermore, the report is quite silent on cultural human factors.

The RIIC design process needs a serious overhaul so that it can continuously respond to these shortcomings. Rural Industries Innovation Centre’s research and development efforts will need to be focused so that its output is relevant to the development of the country. This has led to Botswana not having a strong tradition of technical research and development that can be used as a basis for developing “home grown” technology.

Another organisation dealing with industrial design is the Botswana Technology Centre (BOTEC), which was established in 1979 under the Ministry of Communications, Science and Technology. The Centre’s mandate is to promote science, design and technology through research and development, technology transfer, industrial support, policy development and specialised informational services and systems on technological solutions for industry, business and education (BOTEC, 2004). BOTEC’s goal is to add quality to Batswana’s lives and to contribute to the economic development of the country. The Centre’s research, adaptation, development and technology transfer focus on renewable energy technologies; electronics systems; sustainable architecture; energy efficiency and energy audits; waste water management; specialised information on emerging technological solutions and information communication technology systems for development.

This centre has been involved in design and development of various products that have local relevance to the society and are related to industrial design. Due to the abundance of sunlight in Botswana, BOTEC has been researching how solar energy can be utilised for Botswana’s benefit. This research has resulted in designing products such as a solar-powered hearing aid, photovoltaic water pumping devices, a centralised photovoltaic lighting system for rural areas and a remote monitored weather station. However, BOTEC seem to follow the RIIC design process. According to their marketing department, the solar powered hearing aid is not attractive to youth and sportspeople.
because it is cumbersome. This indicates that the interests of these groups were not represented or adequately addressed in the initial design activity. In 1999, BOTEC initiated the National Design and Development Awards. The aim is to promote design and development of new inventions and innovations because it was realised that there was very little effort being made in Botswana to promote design.

Plans are at an advanced stage to merge RIIC and BOTEC since there is a lot of overlap in the activities they undertake. Initially, RIIC was to concentrate on designing products that would uplift the standard of living in rural areas, and BOTEC was to focus on high-tech products; but somewhere along the line the two began to overlap. It is doubtful whether Botswana’s research and development institutions are delivering value in terms of generating viable and accessible knowledge relevant to the needs of the economy. The mandate and focus of these two centres are on developing and adapting technologies for the local market. This kind of inward looking generally fails to encourage the two centres to undertake research and develop technologies that could be of interest to markets and users abroad (United Nations Development Programme, 2005). This kind of adaptation of low-value technologies practiced by RIIC has a fundamental flaw because low technology content focussed on rural development is based on mild improvements through mechanisation. Thus, the programme is not seeking breakthrough innovations. This type of innovation does not transform the economy through any significant gains in productivity and/or competitiveness.

6.6 Summary

In Botswana, as demonstrated at the Rural Industries Innovation Centre, human-centred design is still in its infancy and far removed from the everyday work and interest of local designers. The prevailing approach to design and development is still characterised by the application of engineering techniques to technological problems without much, if any, attention to human factors and culture. As elsewhere in the world, this results in poor product usability, poor user performance or low productivity. This means that RIIC needs to review the way it approaches the design process, and should infuse local thought and content. In this study, the importance of socio-cultural user research is emphasised, to
enable product designers to better understand and design for their intended users. Regardless of the research method used, the primary objective is to develop an understanding of users’ values, attitudes and behaviour that can be translated into viable, powerful design concepts. In conclusion, human-centred design should not only include usability aspects but it should go beyond and incorporate the cultural background and social situation of the user at the time of using the product. The next Chapter discusses the research methodology which will assist in attaining the study’s aims and objectives as outlined in Chapter 1.
Chapter 7

RESEARCH METHODOLOGY
7.0 Introduction

In order to choose an appropriate research methodology, an extensive literature review was conducted on the methodologies other researchers have used in similar circumstances. It is against this background that the study adopts the qualitative research methodology. Qualitative research is an interdisciplinary, trans-disciplinary and sometimes counter-disciplinary field. According to Denzin and Lincoln (2005:7)

*Qualitative research embraces two tensions at the same time. On one hand, it is drawn to a broad, interpretive, postexperimental, postmodern, feminist and critical sensibility. On the other hand, it is drawn to more narrowly defined positivist, postpositivist, humanistic and naturalistic conceptions of human experience and its analysis. Further, these tensions can be combined in the same project, bringing both postmodern and naturalistic or both critical and humanistic perspectives to bear.*

Qualitative research draws upon and utilises approaches and methods such as ethnomethodology, phenomenology, hermeneutics, feminism, deconstruction, ethnography, interviews, cultural studies, artefacts and participant observation. This generic focus of each of these versions moves in four directions at the same time: (i) the detour through interpretive theory linked to (ii) the analysis of the politics of representation and the textual analysis of literary and cultural forms, including their production, distribution and consumption, (iii) the ethnographic, qualitative study of forms in everyday life and (iv) the investigation of new pedagogical and interpretive practices that interactively engage critical cultural analysis in the local community (Denzin and Lincoln, 2005).

This methodology studies things in their natural settings using a multi-method approach (triangulation) in an attempt to secure an in-depth understanding of the phenomena being studied. The combination of multiple methods, empirical materials and observations in a single study is best understood as a strategy that adds rigour, breadth, complexity, richness and depth to any inquiry. Researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is studied and the
situational constraints that shape inquiry. They seek answers to questions that stress how social experience is created and given meaning. Researchers speak from within a distinct interpretive community and this allows them to record accurately their observations whilst also uncovering the meanings their participants bring to their life experiences. Qualitative research relies on the subjective verbal and written expressions of meaning given by individuals studied, as windows into the inner lives of these persons filtered through the lenses of language, gender, social class, race and ethnicity.

Therefore, qualitative research suits this study because Botswana’s socio-cultural factors must be interpreted from the perspective of the participants being studied. As Bryman (2001) puts it, the researcher should “see through the eyes of people being studied.” However, this predilection for seeing through the eyes of the participants studied in the course of qualitative research is often accompanied by the closely related goal of seeking to probe beneath the surface appearance. Moreover, one must have a process which involves “talking to insiders to help make the basic assumptions and values explicit” (Schein, 1999). This provides detailed information about how socio-cultural factors can be transformed into cultural-orientated product design features. The process enables one to assess how different layers of culture (basic assumptions, values, beliefs, attitudes, rituals and behaviour) interconnect in designing products (Section 2.1). Therefore, the research has been organised as follows:

- Developing a socio-cultural framework analysis from a postcolonial perspective on how design principles relate to Botswana’s culture (Chapters 2, 3 and 4)
- Determining the experimental design and sampling method
- Defining the researcher’s role
- Determining data-collection procedures
- Developing the coding system and
- Analysing data and reporting findings.

7.1 Experimental design and sampling method

This study was based on a single-case experimental design. Fourth-year design students of the University of Botswana participated as illustrated in Table 3. The experimental
approach has been widely used in similar situations in product design research (Cross et al., 1996; Dorst, 1996; Akin and Lin, 1996; Popovic, 1996; Tyan-Yu et al., 2004). The research seeks to develop an in-depth understanding of the research problem by collecting multiple forms of visual and textual data from participants. During the design experiment, participants were investigated in their natural environment in order to reflect on the process they used. This approach assists in gaining an understanding of the participants’ behaviours, values, and beliefs in terms of the context in which the research is conducted.

This section is divided into two phases. The first phase deals with traditional socio-cultural factors from folktales and other contemporary sources, whilst the second investigates how socio-cultural factors can be integrated into the human-centred design process. For this study, socio-cultural factors are variables that regulate the conduct of the society in a given context. Pilot studies were conducted for both these phases. For example, four folktales were analysed to extract socio-cultural factors, and twelve participants were involved; the conclusions that were drawn assisted in the implementation of the final experiment.

**Phase one: Identification of socio-cultural factors**

Botswana’s traditional socio-cultural factors were identified by extracting them from folktales. Folktales, rather than other forms of oral traditions, were selected because they contain rich data on the subject area. The importance and power of folktales lie in their ability to make sense of events, call up memories, teach lessons, inspire empathy and enthusiasm and suspend disbelief (DeLarge, 2004). Therefore, folktales are powerful cultural tools. Contemporary socio-cultural factors (those influenced by Western values) were extracted from the *National Policy on Culture* (2002) and *A framework for a long term vision for Botswana 2016* (1996) (Appendix 2). These documents were chosen because of they were readily available and dealt not only with past and present cultures, but also projected the society’s future aspirations and expectations.

To extract socio-cultural factors from Botswana’s traditional and contemporary cultural sources, it was found that the method of content analysis was more appropriate for this
task (Appendix 1). Content analysis allows closeness to text which can alternate between (a) specific categories and relationships and (b) statistical analyses of the coded form of the text. It is an unobtrusive means of analysing social interactions.

The traditional and contemporary socio-cultural factors were then combined and from these, a set of common factors applicable to product design in Botswana was developed (Figures 5, 6, 7 and 8). Traditional factors assist designers to draw on a foundation for extending to new experiences; in other words, the past informs the present and the future. The main characteristic of a society is a willingly accepted coexistence of new technology and old social forms (Miller, 2002). Eight tales were purposefully selected for analysis, and this number was found to be suitable because it comprised two adventure stories, one history, three myths, one nature story and two stories dealing with love. According to Jason, (1997) ten tales or 9000 words seem to be a fair sample of a society’s oral literature. In this case the folktales provided 10 272 words.

**Phase two: Investigating how socio-cultural factors can be transformed into product design features**

The setting for the experiment was in the Design studio and Design workshop at the Department of Industrial Design and Technology, University of Botswana. Participants were selected by a purposeful sampling method. The University of Botswana fourth-year undergraduate design students were intentionally selected because they had been together as a group for the previous four years and, therefore, had a common social interaction and shared similar behaviours, values, beliefs and the same language. The students were also enrolled in the *Minor design and make project* course (DTB 423). This course allowed for flexibility, which accommodated the requirements of this research project and at the same time did not disadvantage participants from their normal routine. The experiment involved 23 participants; their profile is illustrated in Table 3. It is worth noting that the study did not compare the output produced by participants in terms of gender, age or experience. Rather, the focus was on investigating how participants transformed socio-cultural factors into product design features, and whether these factors could generate novel design concepts and facilitate product acceptance.
Table 3 Participants’ personal profile

<table>
<thead>
<tr>
<th>Participants’ Profile</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of participants</td>
<td>23</td>
</tr>
<tr>
<td>Age range</td>
<td>21–24 years</td>
</tr>
<tr>
<td>Male</td>
<td>20</td>
</tr>
<tr>
<td>Female</td>
<td>3</td>
</tr>
<tr>
<td>Occupation</td>
<td>Students</td>
</tr>
<tr>
<td>Educational background</td>
<td>4th year undergraduate design students</td>
</tr>
<tr>
<td>Educational institution and country</td>
<td>University of Botswana, Botswana</td>
</tr>
</tbody>
</table>

In order to address the research problem, participants were presented with a design brief which contained the common socio-cultural factors (Appendix 3). Their challenge was to transform these factors into product design features that would acknowledge Botswana’s culture. However, participants were not limited to using only the socio-cultural factors provided in the design brief. They were meant for guidance only, and participants were free to draw on other socio-cultural factors in their design work. For example, some socio-cultural factors were drawn from interviews and observations that they had themselves conducted. The experimental procedure is illustrated in Table 4.
Table 4 Experimental procedure

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activity</th>
<th>Duration</th>
</tr>
</thead>
</table>
| 1. Introduction        | - Explain the aims and objectives of the design project.  
- Explain the role of participants.  
- Discuss the open design brief (Appendix 3).  
- Hold a brainstorm session on the design brief.  
- Explore examples of illustrations on how socio-cultural factors can be transformed into product design features. | 1 week   |
| 2. Research            | - Participants conduct their research as per the discussed design brief. This involved conducting interviews with experts on culture, by visiting museums, libraries, craft centres, traditional craftsmen, technology research centres, designers, and elderly persons. | 3 weeks  |
| 3. Design              | - Participants sketch and explain different concepts in sketch books that solved the identified problem.  
- Participants develop their chosen concept(s).  
- Note: This stage was conducted concurrently with stage 2.                                                                                     | 4 weeks  |
| 4. Model making        | - Participants were requested to produce design mock-ups for their chosen concept;  
- This activity was conducted in the Design workshop and all the safety precautions were enforced by the workshop technicians.                                                                  | 6 weeks  |
| 5. Testing and Evaluation | - Participants assessed and evaluated the extent to which they had satisfied the design brief;  
- Evaluation involved getting opinion from relevant experts, designers and users.                                                               | 2 weeks  |
| 6. Retrospective interviews | - Administer retrospective interviews to address the research question (Appendix 4).                                                                                                                       | 2 weeks  |
| **Total Duration**     |                                                                                                                                                                                                         | **14 weeks** |

This was a one-semester design project and it took about 14 weeks to complete. The schedule was based on a four-hour weekly contact with participants to check on their progress and to attend to any outstanding issues. The project was under the supervision of the participants’ lecturer. Efforts were taken to ensure minimal disruption to the students’ normal programme.

### 7.2 Role of the researcher

The Gans classification of participant observer roles as cited by Bryman (2001) was adopted. At the launch of the design project, the researcher was a “participant and
observer.” The researcher was therefore completely involved in the discussion and brainstorming sessions of the design brief. This situation changed once participants started to have a clear understanding and direction on what to do. During the course of the design project, the researcher assumed the role of a “researcher-participant” whereby the researcher participated in a situation, but was only semi-involved so that he could function fully as a researcher. At the end of the design project, he assumed the role of a “total researcher” which entails non-involvement in the situation. This role was used when conducting retrospective interviews (Appendix 4). This kind of approach enabled some flexibility in handling situations unlike those where the researcher assumes a single role. The approach also reflects the researcher’s degree of involvement and detachment (Creswell, 2002).

7.3 Data collection procedure
Data was collected using multiple instruments, comprising verbal, textual and visual forms (Figure 3).

![Figure 3 Data collection sources](image)

Verbal data
To minimise bias, an interview protocol was prepared beforehand, covering key research issues (Appendix 4). Individual interviews were administered using open-ended questions that lasted for about half an hour. The interviews were tape-recoded and transcribed. All participants were involved in retrospective interviewing. The number of participants (23) who took part in retrospective interviews was considered to be adequate; this accords with Gaskell’s (2000) recommendation that 15 to 25 individual interviews are sufficient
for a single project. Prior to the main experiment, interview items were pilot tested to 10
design students of the University of Botswana to establish the items’ trustworthiness and
to improve the question format. A sample coded interview script is attached (Appendix
8). Retrospective interviews enabled participants the opportunity to explain how they
transferred and applied different socio-cultural factors into design features. The main
concern was to achieve depth and roundedness of understanding on how cultural factors
could be integrated in design, rather than to gain a broad understanding of surface
patterns. Verbal data (retrospective interviews) were triangulated with other data
collection methods such as visual and textual data to see how well they corroborated each
other (Figure 3).

Textual data
To extract socio-cultural factors from textual data, analyses were performed on secondary
cultural documents such as folktales, the National policy on culture, reports on
Botswana’s culture and A framework for a long term vision for Botswana (Figure 3). This
data also included reflective reports that were written by participants to summarise their
experiences from undertaken this project.

Visual data
Visuals and documents are an important component of this study because words and text
cannot express all the elements of the visuals in which the researcher is interested.
Consequently, processes of visualisation provided another multiple level of data analysis.
The visuals were necessary for exploring intangible visual images and social practices
because aspects of Botswana’s culture can be traced through them. Thus the interest in
design models and visuals is a form of material culture involving the expression of
something which is not based in language or necessarily reducible to it. Artefacts often
say and communicate precisely that which cannot be communicated in words (Tilley,
2001). They have multidimensional qualities relating to sight, sound, smell, taste and
touch, enabling remarkably subtle distinctions to be made. Therefore, participants design-
models, sketch books and photographs need to be read and interpreted in the context of
how they were designed and used, what meanings they carry, and what they are seen to represent culturally (Figure 3).

### 7.4 Coding framework

This section discusses the analyses of the visual and textual data collected from participants and data from folktales and contemporary sources. The first step in content analysis is to define the samples of analysis. Consequently, the following were taken as samples of analysis: different types of folktales, the *National Policy on Culture* (2002), *A framework on the long term vision for Botswana 2016* (1996), the *UNESCO National report on Botswana living values* (2001), retrospective interviews, design reports, design images and sketches. In order to analyse raw data, a coding system was developed (Table 5). The coding system was developed during the pilot study phase and this provided a starting point for analysing the main experiment. The development of the coding system involved naming and grouping data into themes. That is, similar properties were grouped together to form a theme. “The crucial requirement is that the themes are sufficiently precise to enable different coders to arrive at the same results when the same body of material is examined” (Silverman 2001:123). This resulted in the following four broad interrelated themes: (i) identification of socio-cultural factors, (ii) integration to product design, (iii) generation of novel design concepts and (iv) facilitation of product acceptance. From these four themes, twelve codes were generated: material factors, social practices, emotional factors, technology/design factors, function, mediation, knowledge, gender, signification, aesthetics, novel design concepts and product acceptance (Table 5). Each code has a description, interpretation parameters and an illustrative example of the text.

**Inter-rater reliability**

In order to provide evidence of the validity of the conclusions drawn by this study, three independent coders were recruited and trained in procedures which aim to ensure a uniform approach to the data. Two coders were from Botswana; the third was from a different culture.
Coders were given a training session as well as guidelines to follow when coding. The first stage of training clarified and achieved agreement on each code definition. A lot of time was devoted to this stage as it informs subsequent stages of data analysis. After explaining and discussing various coding themes and their definitions, a joint practice session was conducted. Thereafter, each coder was asked to individually code the given sample scripts and images using the paper-and-pencil format. Fielding and Lee (1998:99) observe that “the primary challenge is to make sure that coders are actually cross-coding identical data.” To attain inter-rater reliability, the trained coders placed the statements in the same categories as did the primary researchers. This method of assessing reliability is used when no statistical tests are available for determining reliability for data such as these (McMillan, 2000).

Although not all parts of all statements were coded exactly alike by the coders, most of the statements were coded identically to those of the primary researcher. Coders compared how they coded their data and then evaluated it against that of the primary researcher. In meeting with the coders to discuss the results, the researcher was able to negotiate some agreement on those statements that were coded differently. The results of the coding were positive in that a clear pattern of agreement emerged among the three coders. For example, coder ‘A’ coded 42 out of 45 individual comments made (93%), coder ‘B’ coded 40 out of 45 (89%) and coder ‘C’ coded 37 out of 45 (82%). These results established a satisfactory degree of agreement and, therefore, the coding scheme was deemed reliable enough to allow analysis to proceed.
### Table 5 Coding framework

<table>
<thead>
<tr>
<th>Theme</th>
<th>Property</th>
<th>Code</th>
<th>Example</th>
<th>Description</th>
<th>Interpretation Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identification of socio-cultural Factors</td>
<td>Material Factors</td>
<td>MTF</td>
<td>“I was designing a thumb piano, which is a traditional musical instrument”</td>
<td>Physical Factors related to products that Baswana use in their daily lives</td>
<td>Tangible factors that deal with the design of physical artefacts</td>
</tr>
<tr>
<td>Social Practices</td>
<td>SPF</td>
<td>SPF</td>
<td>“…in our culture, the element of collective use or sharing is very prominent”</td>
<td>Traditional or contemporary practices</td>
<td>Activities that are habitually or customarily followed</td>
</tr>
<tr>
<td>Emotional Factors</td>
<td>EMF</td>
<td>EMF</td>
<td>“The instrument was mostly played for fun, entertainment …”</td>
<td>Factors related to having and expressing a strong feeling about designed products</td>
<td>A mental state that arises spontaneously and is often accompanied by changes in the state of mind</td>
</tr>
<tr>
<td>Technology/Design Factors</td>
<td>TDF</td>
<td>TDF</td>
<td>“On the ergonomics aspect of it, the human forms…”</td>
<td>Technical factors that were considered and applied during the course of designing products</td>
<td>Factors dealing with the application of scientific knowledge to practical design problems</td>
</tr>
<tr>
<td>Integration of Socio-cultural Factors into Product Design</td>
<td>Function</td>
<td>FNT</td>
<td>“This is a bottle opener which is used to open bottle tops of beer and other drinks.”</td>
<td>Specific role of the product in relation to its users</td>
<td>Design factors that enhances the physical action of its users</td>
</tr>
<tr>
<td>Mediation</td>
<td>MDT</td>
<td>MDT</td>
<td>“Music elevates and inspires people to perform certain tasks better…”</td>
<td>Design features that carry messages about user’s culture</td>
<td>Design factors that enhances communication between users</td>
</tr>
<tr>
<td>Knowledge</td>
<td>KLG</td>
<td>KLG</td>
<td>“The use of the horn was inspired by musical instruments that were used a long time ago by our fore-fathers in times of war or social ceremonies”</td>
<td>Information contained in the product</td>
<td>Design features that delivers specific information to users</td>
</tr>
<tr>
<td>Gender</td>
<td>GND</td>
<td>GND</td>
<td>“The use of a stool is gender biased because you find that old men in social gatherings are the ones who sit on them and women sit on mats”</td>
<td>Expression of the product target users in terms of gender</td>
<td>Design features that differentiate users by gender</td>
</tr>
<tr>
<td>Theme</td>
<td>Property</td>
<td>Code</td>
<td>Example</td>
<td>Description</td>
<td>Interpretation Parameters</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------</td>
<td>------</td>
<td>-------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------</td>
</tr>
<tr>
<td>Integration of Socio-cultural Factors into Product Design</td>
<td>Signification</td>
<td>SNF</td>
<td>“I was looking at old people who walk from one place to the other especially in rural areas”</td>
<td>Product design communicates specific social group membership</td>
<td>Declaration of the social group membership</td>
</tr>
<tr>
<td>Aesthetics</td>
<td>AST</td>
<td></td>
<td>“…this could lead to products that are attractive and appealing to their users”</td>
<td>An expression of beauty or aesthetic value by the product design</td>
<td>Emotional factors that induce appreciation of beauty within the same socio-cultural context</td>
</tr>
<tr>
<td>Novel Design Concepts</td>
<td>Novel Design Concepts</td>
<td>NDC</td>
<td>“…mechanism for folding and unfolding for easy carrying”</td>
<td>New concept, different, distinct style and image that meets user’s needs</td>
<td>Product design that uses socio-cultural factors to inspire new design concepts</td>
</tr>
<tr>
<td>Product Acceptance</td>
<td>Product Acceptance</td>
<td>PAC</td>
<td>“…in line with their norms and values”</td>
<td>Design features which users can identify with</td>
<td>Products reflecting the identity of users</td>
</tr>
</tbody>
</table>

**Key**

- **MTF** - Material Factors
- **FNT** - Function
- **SNF** - Signification
- **SPF** - Social Practices
- **MDT** - Mediation
- **AST** - Aesthetics
- **EMF** - Emotional Factors
- **KLG** - Knowledge
- **NDC** - Novel Design Concepts
- **PAC** - Product Acceptance
- **TDF** - Technology/Design Factors
- **GND** - Gender
Coding verbal and textual data

A sentence was used as the unit of analysis. It was further decomposed into segments. A segment is defined as a specific thought unit that conveys an idea or theme (Weber, 1990). Each segment was in the form of a clause, phrase or word referring to the specific theme (Table 5). In instances where sentences in an interview, folktale or cultural document related to a single cultural factor, that sentence would carry one code. An example is this interview excerpt: “The cow horn is used for different purposes in our day to day lives.” This sentence relates to a single socio-cultural factor and it was coded once because it makes reference to a “cow horn”. This is a “material factor”, so was coded (MTF). Likewise, in the National Policy on Culture (2002:16) a sentence such as “…recognise the family unit as the basic institution for enculturation…” was coded once as (SPF), a “social practice factor”, because of its reference to the “family unit.” In some cases, visuals, sentences or paragraphs contained multiple socio-cultural factors; in such cases the image, paragraph or sentence was coded by the number of socio-cultural factors contained in it. For example, a sentence such as “I incorporated the socio-cultural factors of social gathering and happiness” was coded twice. The first was based on “social gathering”, which is a “social practice factor” and was coded (SPF). The second was on “happiness” so was coded (EMF), an “emotional factor”. In another example from folktales, a sentence like “…and they handed her the largest and most beautiful shell she had ever seen” (Honey, 1910:23) also carries two messages: that of “beauty”, an emotional factor (EMF) and that of “shells”, a material factor (MTF). Appendixes 2, 5 and 7 illustrate how coding was done. Atlas.ti software was used to assist in this process.

Data analysis for this study was divided into two sections. The first section adopted a conceptual analysis technique in order to identify the appropriate socio-cultural factors that impact upon design. This procedure for data analysis comprises three steps as suggested by Krippendorff (1980) and Weber (1990): (i) aggregation of the coder’s ratings, (ii) totalling the overall counts of socio-cultural factors coded under material, emotional, technology/design factors and social practices (Figures 5, 6, 7 and 8) and (iii) the analysis of the socio-cultural factors. The themes were represented by words, phrases or paragraphs in texts, and design features in images. In this case, a theme was chosen for
examination, and the analysis involved quantifying and tallying its presence. The focus was on looking at the occurrence of selected explicit or implicit socio-cultural factors within the folktale, cultural document, interview scripts, design reports and images. For example, there are several socio-cultural factors contained in the statement: “A rose is associated with cultural factors of love, joy, family and perhaps marriage.” In this statement, “love” and “joy” are emotional factors (EMF); “family” and “marriage” are social practice factors, and were coded (SPF). Occurrence of the socio-cultural factors in each theme was analysed to determine their relative importance. A higher relative count reflects the strength and significance of that particular socio-cultural factor within the specific theme (Figures 5, 6, 7 and 8).

The second section of data analysis involved a relational analysis approach that goes one step further by examining and identifying the relationships among themes present in a given text or set of texts. Individual concepts in and of themselves are viewed as having no inherent meaning; rather, the meaning is a product of the relationships among concepts in a text (Carley, 1990). Therefore, this part was concerned with reflecting participants’ points of views on how socio-cultural factors could be integrated in designing products and whether the same could be used to generate novel design concepts and facilitate product acceptance.

The coding of data entails assigning distinctive labels to text passages such as a word, phrase, sentence or paragraph that contains references to specific themes of information. For example, “The incorporation of the horn to the opener makes it unique to existing bottle openers” is a sentence that makes reference to a “horn”, so was coded MTF, a material factor. At the same time, “the opener is unique” was coded NDC, a novel design concept. The themes have been used “to identify patterns” (Reinharz, 1992:155) and to place them within an interpretive context. This focussed coding approach allows for the clarification and building of key concepts and theories.
Coding visual data

Visual data (sketches, images) was used to back up textual data. All design images from participants were coded using the same coding system. The information from visual data assisted in analysing (a) which socio-cultural factors were chosen and used by participants in their prototypes, (b) how participants transformed socio-cultural factors into product design features and (c) whether the use of socio-cultural factors could be used to generate novel design concepts and facilitate product acceptance. Appendix 6 demonstrates how images were coded using the Atlas.ti software. For example, the highlighted frame (walking stick) is coded KLG, NDC and TDF (Appendix 6). The panel provides information (KLG) to motorists that a blind person is crossing the street. It is a novel design concept (NDC) compared to other walking sticks because the panel lights up at night, and the stick can sense pools of water on the road. Lastly, it has some technology/design factors (TDF) built into it because it houses the electronics of the product.

7.5 Summary

The experimental design method was found to be suitable for this study because it developed an in-depth understanding of users’ culture. The content analysis of traditional and contemporary socio-cultural factors helped to realise the second phase of the study; that is, the application and transformation of socio-cultural factors into locally recognised product design features. The University of Botswana design students played a key role as participants in the process. However, a coding system was developed and tested by three coders to assist in the analysis of visual and textual data. Consequently, the next chapter deals with the analysis and interpretation of this data.
Chapter 8

DATA ANALYSIS AND INTERPRETATION
8.0 Introduction

The relational content analysis approach holds that individual concepts in themselves are seen as having no inherent meaning, but that meaning is generated as a result of relationships among concepts (Carley, 1990). Figure 4 illustrates the relationships among the themes of socio-cultural factors, integration of socio-cultural factors in product design, generation of novel design concepts, and facilitation of product acceptance (Table 5). These themes form the focus of this chapter. They were then inter-related to extract the underlying meaning within them (Figure 4).

Figure 4 Themes interrelationship

The first stage of the themes interrelationship involves the identification of appropriate socio-cultural factors. These comprise material, social practices, emotional and technology/design related factors (Table 5). The next stage deals with how socio-cultural factors can be integrated into designing products (Figure 4). This entails embedding these socio-cultural factors into tangible or intangible product design features which are cultural-orientated to the local context. The design features could be inspired by either traditional or contemporary attributes, or a combination of both. The blending of the contemporary and traditional attributes makes people feel at ease, as well as being modern and adventuresome (Hughes, 2004). The third stage in the process examines whether embedding socio-cultural factors at a conceptual design level can assist designers to generate novel design concepts. The last stage investigates which physical and non-physical design attributes incorporated in the latter stage are likely to facilitate product acceptance (Figure 4). Evidence from the literature (Baxter, 1999; Csikszentmihalyi, 1996; De Souza and Dejean, 1999; Margolin, 2002) suggests that users
will accept products that reflect their social practices, emotions, values and norms. The next section analyses these themes in depth.

### 8.1 Identification of socio-cultural factors

The summary of the socio-cultural factors identified during the study are illustrated in Figures 5, 6, 7 and 8. The x-axis represents each socio-cultural factor and the y-axis represents the percentage rate of occurrence of each socio-cultural factor used in the experiment or in other cultural sources. Figure 5 shows the utilisation of socio-cultural factors from folktales and contemporary sources. It is important to note that these socio-cultural factors might be similar to those of any other society, but their interpretation will differ within the local context. For example in Botswana, significant factors include water, cattle and indigenous materials. Water is a valuable resource to the Batswana because of the semi-arid climatic conditions of the country and it needs to be conserved; consequently, water conservation and recycling were suggested as areas that need design intervention. Owning cattle is important socially and culturally, and are Botswana’s engine of the rural economy (Section 2.3). Most designs were inspired by the use of indigenous materials such as wood, cow horn, ostrich eggs, and bamboo. The higher the frequency rate of occurrence of a particular socio-cultural factor, the greater its cultural significance (note the high ratings for cattle and water in Figure 5).
The frequency rate of occurrence of social practice factors indicates that Batswana value the contribution made by these factors to their everyday lives. Figure 6 shows the social practice factors extracted from folktales, contemporary sources and the experiment. The family (Factor 4 in Figure 6) has demonstrated its prominence both as a social and design factor. It is significant to Botswana’s culture because it is the main agent of socialisation (Sections 3.1 and 4.1). This means that other social factors can be built around the family foundation. Such factors may include, but are not limited to, the following: unity, respect, assistance, identity, social gathering, storytelling, spirit of collective use or sharing, and preservation of culture (Figure 6). The family is a major social group of users and as a
result, design efforts were aligned at fulfilling family cultural values. Identity is another common prominent socio-cultural factor (Figure 6).

![Social Practice Factors (SPF)](image)

**Key**

**Common social practice factors from the experiment, folktales and contemporary sources**
1. Assistance
2. Chieftaincy
3. Cooperation
4. Family
5. Farming
6. Identity
7. Marriage
8. Measurement of time
9. Peace
10. Playing music
11. Religion
12. Respect
13. Responsibility

14. Self-reliance
15. Sitting around the fire
16. Sitting under a shade tree
17. Spirit of collective use/sharing
18. Storytelling
19. Traditional dancing
20. Trust
21. Unity

**Different social practice factors from the experiment, folktales and contemporary sources**
22. Authority
23. ‘Phane’ gathering
24. Consultation
25. Cultural heritage
26. Fauna
27. Flora
28. Harmony
29. Preservation of culture
30. Social gathering
31. Status
32. ‘Botho’
33. Democracy
34. Economy
35. Education
36. Exchange of gifts
37. Fishing
38. Gender relations
39. Language
40. Promise
41. Protection of wildlife

Figure 6 Social practice factors

The common emotional factors extracted from available sources and from the experiment include beauty, excitement, friendliness, fun, happiness, joy, kindness, love, satisfaction, gratitude, frustration and ugliness (Figure 7). Family relationships are defined in emotional terms and, therefore, the family becomes the primary producer of these emotions. The designs are supposed to be aesthetically pleasing (appealing) to afford their users a sensually pleasurable experience. This has been achieved by using elements
of traditional aesthetics (local motifs, colours and forms) which contribute to beauty (Figure 7). Products that are regarded as beautiful appear to have the right answers to questions that users might ask (Moalosi et al., 2004). Beauty in products can be achieved by the use of appropriate colour, shape, size, weight, texture and concinnity; that is, the skilful, harmonious and rational unity of a design that captures its elegance, style, neatness and symmetry. The logic of beauty requires that a design ‘makes sense’ to its users and concinnity ensures that this objective is fulfilled.

**Figure 7** Emotional socio-cultural factors

Figure 8 shows that electronics, ergonomics, functional constraints, cultural fitness, hydraulics, pneumatics, mechanisms and product quality are Technology/Design factors
that can add utility and expressive value to products. For example, electronics can be used to improve the efficiency of products, and the anticipated result is to have a concept that arouses appropriate emotional feelings. The field of science and technology (Figure 8) has been identified as a catalyst in design as well as a core area in the education system (Section 4.1).

![Technology/Design Factors (TDF)](chart.png)

**Key**

<table>
<thead>
<tr>
<th>Technology/Design factors from the experiment</th>
<th>Socio-cultural factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assistive technology</td>
<td>6. Ergonomics</td>
</tr>
<tr>
<td>2. Cognitive fit</td>
<td>7. Functional constraints</td>
</tr>
<tr>
<td>3. Computing</td>
<td>8. Hydraulics</td>
</tr>
<tr>
<td>5. Electronics</td>
<td>10. Pneumatics</td>
</tr>
<tr>
<td></td>
<td>11. Product innovation</td>
</tr>
<tr>
<td></td>
<td>12. Product quality</td>
</tr>
<tr>
<td></td>
<td>13. Sustainability</td>
</tr>
<tr>
<td></td>
<td>14. Technophobia</td>
</tr>
</tbody>
</table>

**Common Technology/Design factor from the experiment and contemporary sources**

Figure 8 Technology/Design factors

After identifying the appropriate socio-cultural factors, the next section analyses how these factors (Figures 5, 6, 7 and 8) were integrated in designing cultural-orientated products.

### 8.2 Integration of socio-cultural factors in product design

The analysis of this section was conducted in relation to Dant’s (1999) framework (Section 3.2) rather than Jordan’s (2000) model. Dant’s framework was chosen because
users’ interactions with products deliver various benefits at different levels; Jordan’s model is restricted to only pleasure with products. Other models from Maguire (2001), Rouse (1991) and Stanton (1998) offer a narrow view of product analysis because they are limited to functional and aesthetic attributes only. The narrow view is also criticised by De Souza and Dejean (1999), Margolin (2002), Yang (2003) and Lee (2004), who point out that designers concentrate on functional attributes at the expense of non-physical factors. Yang (2003) takes a contrary view when he observes that design is sometimes upgraded from functional satisfaction to spiritual concern, which is the fundamental factor of infusing culture in design. The aim is to examine how each of the four socio-cultural factors (material, social practices, emotional and technology/design) were transformed into product attributes of function, mediation, knowledge, gender, signification and aesthetics to enhance users’ experience (Section 3.2).

**Material factors (MTF)**

Material factors were analysed in relation to functional product features (Table 5). The materials used in this experiment were divided into indigenous and contemporary. Material factors such as the use of indigenous materials were transformed into functional attributes in designing musical instruments and side lamps (Appendix 6). The choice of indigenous “material factors” inspired the design of local-orientated concepts (Table 6).

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td><em>Materials selected for the product were judged based on their origin, availability and potential towards African aesthetics and culture.</em>&lt;br&gt;I have incorporated indigenous materials and other natural resources.</td>
<td>MTF</td>
</tr>
<tr>
<td>5</td>
<td>I would say the indigenous materials and traditional motifs.</td>
<td>MTF</td>
</tr>
<tr>
<td>16</td>
<td><em>I was inspired by the materials which are abounded in this country that is, the horn and ostrich egg shells which in most cases are used for decorative purposes.</em></td>
<td>MTF</td>
</tr>
</tbody>
</table>

Table 6 demonstrates that the materials were selected consciously. The material chosen conveys the user’s culture.
**Social practices (SPF)**

Social practices were analysed in conjunction with the product’s properties of signification and gender. It is important to identify the social groups which were targeted from the broader social classes. Social classes as discussed in Section 3.1 were considered, and were segmented into social groups such as the family. Other social groups include tourists, musicians, youth, the elderly, the disabled community and the traditional chiefs who are the custodians of the society’s traditions and customs (Section 3.1). These social groups are the ones who exercise social practices such as playing music, attending social gatherings or storytelling (Figure 6).

The experiment demonstrated the importance of the family by creating designs which fulfil family requirements, especially those of the peasant families which make up the bulk of the population (Section 3.1). The family cultural factor has been used in conjunction with other factors such as sharing, cooperation and attending social gatherings (Figure 6). For example, the designs could be used to facilitate sharing or social gatherings within the family. Table 7 supports the observation that the family is the main social group of users.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td><em>I considered the family when designing this product.</em></td>
<td>SNF</td>
</tr>
<tr>
<td>5</td>
<td><em>The main target users are families and individuals…</em></td>
<td>SNF</td>
</tr>
<tr>
<td>8</td>
<td><em>The family should be actively involved in the design process…</em></td>
<td>SNF</td>
</tr>
<tr>
<td>21</td>
<td><em>The design is meant for the family.</em></td>
<td>SNF</td>
</tr>
</tbody>
</table>

The cultural value of the family challenges designers to actively engage family members in the design process from an early stage, when the design concept is still fluid.

Design of musical instruments has assisted in integrating “emotional factors” into the “social practice factor” of playing music. For example, “playing music” is attached to certain “emotional factors” of the musician’s mood. The “rhyme, rhythm and melody are fundamental to our emotions” (Norman, 2004:119). Music played at appropriate times can be an “emotional” enhancer (Table 8).
Table 8 Emotional (EMF) and social practice (SPF) statements related to playing music

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>A player can show his mood. One can <strong>console himself or herself</strong> through music. Music makes one <strong>happy</strong> or <strong>angry</strong>. From a wider sociological perspective, music can be a catalyst that <strong>brings people together</strong> and it portrays the identity of the nation, tribe, family or individual. Music is not only for <strong>pleasure</strong> and <strong>entertainment</strong> but for <strong>healing</strong> and <strong>storytelling</strong>. Our music is a kind of <strong>soul-searching</strong>.</td>
<td>EMF</td>
</tr>
<tr>
<td>14</td>
<td><strong>Families</strong> in rural areas usually play the instrument (thumb piano) while <strong>seated around the fire in the evening or under a tree shade during the day</strong>.</td>
<td>SPF</td>
</tr>
</tbody>
</table>

In addition to these emotional and social practices, music can be played during leisure time, especially when seated around the fire, under a shade tree during the day and at social gatherings (Table 8: Participant 14). The thumb piano, a traditional musical instrument, is played during these activities.

In addition to users being segmented into social groups, they were also divided in terms of their gender. Table 9 demonstrates this gender bias with regard to how participants viewed the use of certain products in the society, such as traditional stools/chairs.

Table 9 Statements on gender (GND) associated with product use

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Nowadays, <strong>ladies can be chiefs and therefore, the traditional chair is unisex</strong>. ...products to be <strong>unisex</strong>.</td>
<td>GND</td>
</tr>
<tr>
<td>4</td>
<td>The product is <strong>unisex</strong> and it can be used by both sexes.</td>
<td>GND</td>
</tr>
<tr>
<td>12</td>
<td>The traditional chair can now be shared by both <strong>male</strong> and <strong>female members of the family</strong>.</td>
<td>GND</td>
</tr>
<tr>
<td>19</td>
<td>Men were considered to be <strong>breadwinners</strong>.</td>
<td>SPF</td>
</tr>
</tbody>
</table>

The designs were either designed for male, female or unisex. Gender issues in design have been discussed in Section 3.3 and Jordan and Junginger (2002) advanced proposals on how gender could be incorporated in designing products. Traditional chairs and stools were cited as products which are “gender” (GND) biased towards males while mats, jewellery containers and baskets were biased towards females (Table 9: Participant 12). The whole concept of males sitting on stools or chairs was rooted in the cultural belief that males were considered to be superior to females (Section 3.3). For example, (Table 9: Participant 19) believes that males were thought to have a higher responsibility in the family. However, this misconception has changed since there are female-headed households and they have an equal opportunity to be chiefs as well. This turn of events
suggests that male-dominated products should become gender neutral (Table 9; Participant 3).

**Emotional factors (EMF)**

Material objects give rise to emotions which is an integral component of material culture (Section 3.2). The analysis was based on the product properties of “aesthetics” and “mediation.” Emotional factors have been incorporated in designs in the form of aesthetic features which evoke users’ feelings. These include the use of traditional motifs, colour, shape and form. The use of these design features has resulted in beautiful and cherishable designs that are likely to induce emotional feelings of happiness, satisfaction, interesting, appealing, inspiration and attractiveness (Figure 7).

These aesthetic attributes can be experienced by senses of sight, hearing, touch, taste and smell. For example, “aesthetics” was portrayed in the form of traditional triangular, square, round and diamond motifs (Table 10: Participants 3 and 18). This kind of transformation has resulted in designs that stir “emotional” feelings. This is what Coates (2003) described as discretionary information (Section 6.3).

Table 10 Statements on how shape, form and motifs influence aesthetics (AST)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>I have also engraved traditional motifs into the chair.</td>
<td>AST</td>
</tr>
<tr>
<td>4</td>
<td>I decided to make it in a hut shape because they are slowly getting extinct. Such shapes attract the attention of the user and invite the user to touch the artefact and this evokes cultural association.</td>
<td>AST</td>
</tr>
<tr>
<td>6</td>
<td>I purposely made it into a human face shape because that is the African way of showing aesthetics.</td>
<td>AST</td>
</tr>
<tr>
<td>14</td>
<td>The piano base looks like a man’s foot wearing sandals whilst other pianos are just plain rectangular shapes.</td>
<td>AST</td>
</tr>
<tr>
<td>16</td>
<td>The transfer is reflected in the shape and form of the product.</td>
<td>AST</td>
</tr>
<tr>
<td>18</td>
<td>The socio-cultural factors that I have used are the round and square motifs…</td>
<td>AST</td>
</tr>
</tbody>
</table>

Shape and form contribute to the overall aesthetic quality of the designs (Table 10). For example, the appropriate use of shape attracts users’ attention and induces cultural association (Table 10: Participant 4). This makes the design simple, honest and inviting. The invitation engages and develops an emotional attachment to the design.

Using appropriate colours which resonate with users’ culture may contribute to designs
which evoke emotional feelings (Table 11). Earth colours (brown, orange, yellow and red) were used to finish the designs (Table 11: Participants 19 and 21). These colours express aesthetic values within the local context and they please the eye. Colours were chosen to reflect customs and beliefs as well as ritual significance (Algotsson and Davies, 1996). Therefore, the use of colour is considered as a useful, evocative and powerful design tool (Section 3.3). Users respond to different colours in different ways and these responses take place on a subliminal and emotional level. According to Algotsson and Davies (1996) in Botswana, the red colour represents bloodshed; green stands for fertility and vitality on earth; white represents purity, victory, dignity and equality; yellow is associated with glory and maturity; blue represents love, life and water; and black stands for death or bereavement. Therefore, the use of colour in the postcolonial designs carries social, physiological, emotional, cultural, personal, and expressive characteristics (Table 11).

Table 11 Statements on how shape and form influence emotions (EMF)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>I used a cap to make it more interesting and attractive.</td>
<td>EMF</td>
</tr>
<tr>
<td>3</td>
<td>They do, as this could lead to products that are attractive.</td>
<td>EMF</td>
</tr>
<tr>
<td>4</td>
<td>This shape attracts the attention of the owner/user and at one point during the day, he/she will have to look at the clock and by so doing they will be viewing the whole artefact.</td>
<td>EMF</td>
</tr>
<tr>
<td>10</td>
<td>It makes the product interesting and appealing.</td>
<td>EMF</td>
</tr>
<tr>
<td>15</td>
<td>…the product becomes attractive and compatible with the society’s values. …will fascinate users.</td>
<td>EMF</td>
</tr>
<tr>
<td>16</td>
<td>Yes, the products are usually more appealing and give a sense of belonging.</td>
<td>EMF</td>
</tr>
</tbody>
</table>

Table 11 demonstrates that the application of colour to designs should be done vigilantly as this can easily undermine essential aesthetic values of users. It illustrates that the use of colour plays an important part in conveying emotional feelings towards the designs. However, while aesthetics is important, Lee (2004) cautions that solutions for cultural design should extend beyond what is obvious and come from a serious understanding of users’ values and basic assumptions (Section 2.1).

In communication, both auditory and visual channels are highly important. Products that employ these channels can facilitate social interactions between users. Using the auditory channel (hearing) can help develop an understanding of the conveyed message. For
example, it is the message in music that facilitates appropriate emotional behaviour: music can be playful, delightful, informative or fun, and all can be emotionally inspiring (Norman, 2004). The other channel of communication is visual. This deals with the expression of gesture by watching and noticing messages embedded in the designs.

It is through form, shape and colour that a design is appreciated and enjoyed. Mediating products engage users in social relationships and in the exchange of ideas, values and emotions. It is this relationship with products that affects relations between users. Users interact with the form of the design, which tells them about the functional and aesthetic design, material technology and manufacturing techniques in the material culture of origin (Table 12).

Table 12 Mediation (MDT) statements

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cultural factors can generate products which can be marketable and at the same time Africanise the products.</td>
<td>MDT</td>
</tr>
<tr>
<td>5</td>
<td>I wanted to give the rack an African theme and that is why I used the ostrich egg and cow horn.</td>
<td>MDT</td>
</tr>
<tr>
<td>9</td>
<td>People would ask what made you do this and the product would have a story to tell</td>
<td>MDT</td>
</tr>
<tr>
<td>16</td>
<td>This kind of product at the end brings some sense of pride because we are using our local materials. When you look at the ostrich egg and horn, these are items which make us proud in Botswana.</td>
<td>MDT</td>
</tr>
<tr>
<td>18</td>
<td>...made of local available materials facilitate a close relationship between the user and product than a product made from foreign materials.</td>
<td>MDT</td>
</tr>
<tr>
<td>22</td>
<td>They localise designed products.</td>
<td>MDT</td>
</tr>
</tbody>
</table>

Table 12 demonstrates that the infusion of socio-cultural factors localises designs. For example, localisation can be achieved by the use of local materials, or by giving designs an African theme (Table 12: Participants 16 and 18).

Figures 5, 6, 7 and 8 indicate that a range of socio-cultural factors — water, cattle, indigenous materials, family, chieftaincy, love, beauty, appeal, ergonomics, science and technology — were used extensively. The use of these factors was corroborated by visual analysis results. Visual data was used to back-up textual data. The analysis demonstrated that among the four categories of socio-cultural factors, social practice factors were the most important because users’ problems and needs are embedded within them. Other
factors support and facilitate activities taking place in the social practice domain. This point has been developed in Section 9.1 (Figure 10).

The data analysis results show that socio-cultural factors were used to draw on symbols, myths, images and rituals to create designs that were anchored in the local cultural context. According to Yang (2003), postcolonial design should not only involve technical standards and functional needs, but should also convey the philosophy, ideology and complicated cultural phenomena of the society. This involves studying users’ behaviour, patterns of living and working, shared culture, concerns, beliefs and the different ways in which users use or experience products. Designs conceived through this process attract and hold user’s interest as well as communicating the key attributes in a language that users can understand (Algotsson and Davis, 1996). Products are symbols, setting up positive frames of mind, reminding users of pleasant memories and acting as an expression of user’s identity (Norman, 2004). The designs may convey a story, a recollection, or something else that ties users personally to them.

**Technology/Design factors (TDF)**

Technology/design factors have been used to enhance functionality and cultural fitness (Figure 8). For example, electronics and hydraulics have been used to enhance the “function” of certain design concepts (Table 13).

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>14</td>
<td><em>I would like to introduce electronics to amplify the sound</em> as you can hear it is not that audible.</td>
<td>TDF</td>
</tr>
<tr>
<td>17</td>
<td><em>The use of hydraulics and electronics has helped in solving the problem facing the disabled community...</em>&lt;br&gt;<em>...electronics and hydraulics improve the physical attributes of the products.</em></td>
<td>TDF</td>
</tr>
</tbody>
</table>

However, functional design features should not take precedence over other design factors such as emotion, aesthetics, knowledge and mediation. Utility and usability are important, but without fun, pleasure, joy and excitement, users’ lives would be incomplete (Norman, 2004).

Technology/Design factors have assisted in the transition from concentrating on tangible
factors to incorporating intangible attributes during the design process. For example, the
cimportance of culture in design is emphasised at Appendix 7 (Table A: Participant 23).
The “Technology/Design factors” which contribute to the cultural fitness of products are
illustrated at Appendix 7 (Table A). Table A suggest that postcolonial design is changing
its direction and scope by emphasising users’ culture. A two-way open dialogue with
users can assist in learning and understanding users’ culture. This could enable the design
of culturally compatible products.

It has been demonstrated that some cultural practices are becoming extinct, and need to
be preserved. In fact, “…some cultural anthropologists have long seen the artefacts we
create as a mediator through which cultural identities are preserved and communicated to
subsequent generations” (Kaptelinin, 1996:45). Table 14 shows that encoding design
concepts with relevant cultural information could lead to “knowledge” related to
preservation of culture.

Table 14 Statements on knowledge (KLG)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>They add substance because they remind people of the history of Botswana and at the same time teach others this heritage.</td>
<td>KLG</td>
</tr>
<tr>
<td>2</td>
<td>I realised that this game should be revamped because it is about to get extinct…</td>
<td>KLG</td>
</tr>
<tr>
<td>19</td>
<td>They are important to the society and they need to be preserved because some of them are dying.</td>
<td>KLG</td>
</tr>
<tr>
<td>20</td>
<td>Socio-cultural factors preserve the users’ culture by being incorporated in products. This becomes the preservation of the society’s history which will be valuable to the next generation.</td>
<td>KLG</td>
</tr>
</tbody>
</table>

The focal point of Table 14 is that postcolonial design can be used as a way of reviving
and preserving users’ culture, and should be based on their knowledge, capabilities,
abilities and desires. The aim is to design not only the object itself but the perception and
even the experience of it.

8.3 Using socio-cultural factors to generate novel design concepts
This section investigates how socio-cultural factors were used to generate novel design
concepts. However, Du Gay et al. (1997) acknowledge that cultural factors have been
insufficiently recognised in the public debate on how they can contribute to product
innovation. The analysis reveals how each of the four major categories of socio-cultural
factors was used to generate new design concepts. Designs were coded in order to identify the novel design features, and this was supported by data from retrospective interviews, sketch books and images (Table 15).

Table 15 Hybridisation of design concepts in generation of novel designs (NDC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td><em>I have merged these materials together and came up with a solid idea thus a side lamp.</em></td>
<td>NDC</td>
</tr>
<tr>
<td>9</td>
<td><em>The incorporation of the horn to the bottle opener makes it unique from the existing openers.</em>&lt;br&gt;<strong>I considered the socio-cultural factors of sharing, triangular motifs, socialisation and attractiveness.</strong></td>
<td>NDC</td>
</tr>
<tr>
<td>10</td>
<td><em>… I have turned a drum into a compact disc holder. Where have you seen a drum used in this way before?</em></td>
<td>NDC</td>
</tr>
<tr>
<td>18</td>
<td><em>I wanted to combine existing products and make a souvenir that does not exist.</em>&lt;br&gt;<strong>I wanted to take two existing ideas and combine them and come up with a single product.</strong></td>
<td>NDC</td>
</tr>
<tr>
<td>23</td>
<td><em>The use of indigenous materials and at the same time combining them to form a single product.</em></td>
<td>NDC</td>
</tr>
</tbody>
</table>

This hybridisation of traditional and contemporary factors has created new design concepts. This is an illustration of the concept of cultural hybridity (Section 2.3), relating to the nature of postcolonial culture as a hybridised phenomenon. This was demonstrated in Table 15 (Participant 10). A traditional drum has been used as the new form of the compact disc holder. A drum is a familiar product which is used when playing music; its form has been borrowed and used in designing a compact disc holder.

In addition, a combination of the product’s shape, form and finish were used to come up with “novel design concepts” (Appendix 7: Table B). In generating novel concepts, these features were changed from existing ones to new forms (Section 5.2). For example, the thumb piano’s form resembles a canoe or shield (Appendix 7, Table B: Participant 14). The new form is different from the traditional rectangular thumb piano shape (Appendix 6). The use of local shapes and forms brings innovation, as opposed to something inspired by the Western culture (Appendix 7, Table B: Participant 16). The shapes and forms of the new designs resemble certain products which are found within the society; for example a hut shape which has been transformed into a clock (Appendix 6).
Rather than relying on the use of indigenous materials and traditional motifs to produce new design concepts, contemporary “Technology/Design factors” (Figure 8) were employed to improve the efficiency, function, and usability of products (Appendix 6). For example, the use of traditional stools and chairs was evaluated (Table 16: Participants 3 and 12). It was found that the backrest and seat were areas that needed design intervention (Table 16: Participant 3). These traditional products are designed with little consideration being given to human factors (Table 16).

Table 16 Novel design concepts (NDC) statements related to ergonomics

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The backrest has been changed to support the lumbar which is a novel feature that is not found in the traditional chair. ...to ergonomically redesign the traditional chair thus, making it suitable to its users. ...users complain about the uncomfortable backrest and seat.</td>
<td>NDC</td>
</tr>
<tr>
<td>12</td>
<td>This design uses leather pieces which would easily take the shape of the users back and buttocks instead of utilising the current strips of hide for the seat.</td>
<td>NDC</td>
</tr>
<tr>
<td>13</td>
<td>They should not concentrate on ergonomics, function and cognitive fit only but they should also consider socio-cultural factors.</td>
<td>NDC</td>
</tr>
<tr>
<td>17</td>
<td>The use of electronics ...adds functional value to the product.</td>
<td>NDC</td>
</tr>
</tbody>
</table>

Differences between the physical human features of males and females were taken into consideration in developing the design concepts (Section 3.3). Human factors were identified as one of the constituents of novel concepts (Table 2). One question that arises is whether the generated novel design concepts can facilitate product acceptance. The next section analyses those design features which are likely to attract and maintain users’ interests.

8.4 Facilitation of product acceptance (PAC)

Basing on the coded segments from the textual data, the following features were indicated as facilitating product acceptance: consideration of the social environment, product identity, preservation of culture, representation of users’ lifestyles, aesthetic and emotional appeal, and narratives from products.
Most design concepts are commercial failures because they do not connect meaningfully with users’ culture (Cross, 2002). Moreover, cultural historian Bernard Carlson (1994:175) underscores this idea:

*Successful products are more than just a bunch of technical solutions. They are bundles of cultural solutions. Successful products, unlike inventions, succeed because they understand the values, institutional arrangements and economic notions of that culture.*

It is against this background that this section examines and identifies product attributes that can be incorporated at the early stages of the design process to facilitate product acceptance. Cultural-orientated concepts have been used as a way of localising some of the Western concepts so that they become relevant to the society (Table 17: Participant 22). To achieve full local acceptance, the designs reflect the local context so that users feel they were designed uniquely for them (Section 5.1). Table 17 illustrates factors that are likely to facilitate product acceptance.

**Table 17 Localisation of design concepts to facilitate product acceptance (PAC)**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>…this is a way of <em>Africanising</em> the products.</td>
<td>PAC</td>
</tr>
<tr>
<td>15</td>
<td>Consideration of socio-cultural factors makes products different from <em>Western products.</em></td>
<td>PAC</td>
</tr>
<tr>
<td>16</td>
<td>…users to accept what they feel <em>represent their way of life.</em></td>
<td>PAC</td>
</tr>
<tr>
<td>18</td>
<td><em>It is better to use a product that has a touch of our culture</em> than one which is foreign which can lead to technophobia.*</td>
<td>PAC</td>
</tr>
<tr>
<td>22</td>
<td>…they fit within the society.</td>
<td>PAC</td>
</tr>
</tbody>
</table>

The localisation of design concepts portrays users’ lifestyles and this stimulates users’ emotions (Table 17: Participant 16). In creating a distinctively local user experience, there is a need to examine common experiences that bring people together emotionally and physically (Chong, 2004). This can be reflected in users’ attitudes, values and norms.

**Table 18 Emotional factors (EMF) facilitating product acceptance (PAC)**

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Yes, as long as they make products look <em>appealing</em>, they will facilitate product acceptance.</td>
<td>PAC</td>
</tr>
<tr>
<td>12</td>
<td>…<em>connects with emotions</em> as well as their expectations.</td>
<td>PAC</td>
</tr>
<tr>
<td>16</td>
<td>Socio-cultural factors <em>encourage that sense of connectedness</em> between users and products.</td>
<td>PAC</td>
</tr>
</tbody>
</table>
Table 18 shows that emotional connection develops into a spiritual relationship between users and products. Products do not only satisfy users’ material demands, but also give them spiritual joy (Yang, 2003). Users might be attached to such designs because they bring significant personal associations, as well as pleasant and comforting moments. The relationship between products and their users becomes the root factor that may foster product acceptance. This is part of the formation of a ‘quasi-social relationship’ with products (Section 3.2).

The first point of contact that most users have with products is through the sense of sight and touch. Appendix 7 (Table C) suggests that designs have to embody appropriate aesthetic appeal for them to attract and retain users’ attention. The aesthetic dimension is a source for reconfiguration of images to make them aesthetically acceptable and culturally appropriate (Algotsson and Davies, 1996). The use of local aesthetics may encourage users to accept products designed for them because they reflect their culture. Products which are abstracted from users’ lifestyles will in most cases face resentment (Dormer, 1996). Users may accept products which are in line with their lifestyles (Table 19).

Table 19 Product acceptance (PAC) statements related to users culture

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The cultural factors chosen reflect Batswana’s way of life.</td>
<td>PAC</td>
</tr>
<tr>
<td>3</td>
<td>Such products will be closer to users’ lifestyles.</td>
<td>PAC</td>
</tr>
<tr>
<td>4</td>
<td>In short, people will accept a product which they associate with their culture.</td>
<td>PAC</td>
</tr>
</tbody>
</table>

Table 19 demonstrates that there should be a relationship between products, users and their lifestyles. Socio-cultural factors can be used to build this quasi-social relationship, and in the process this may promote product acceptance.

The use of traditional, recognisable features from nature — for example, indigenous materials, animal and human figurines and plants — brings products closer to their users. Such features also contribute to “product acceptance” (Appendix 7: Table D). Due to the dynamic nature of culture, contemporary product design features have been added to traditional ones. This enables users “to map new features in terms of or by extension or analogy from, things they already know” (Du Gay et al., 1997:15). Traditional product
features make designs that are familiar to the society. The combination of features enhances traditional products in terms of advancements in contemporary technology. This combination of traditional and contemporary features is derived from the concept of hybridisation (Section 2.3). The difference enables products to have distinct positive identities in the minds of users.

Product “meaning” is one factor which facilitates product acceptance (Table 20). This means that artefacts must not only be designed, but must simultaneously be infused with frames of meaning (Carlson, 1994). Postcolonial designs therefore need to be embodied with social, spiritual, symbolic and moral meanings which relate to everyday events, and individual and family histories (Section 5.1). Table 20 supports this viewpoint.

Table 20 Product meaning that facilitates product acceptance (PAC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The artefacts will have features that narrate something about Botswana e.g. a cultural factor like social gathering brings love, sharing and caring among people.</td>
<td>PAC</td>
</tr>
<tr>
<td>15</td>
<td>Products help in the restoration of memories of the past.</td>
<td>PAC</td>
</tr>
<tr>
<td>19</td>
<td>They bring forth a story or history behind the designed product.</td>
<td>PAC</td>
</tr>
<tr>
<td>23</td>
<td>Socio-cultural factors preserve the users’ culture by being incorporated in products.</td>
<td>PAC</td>
</tr>
</tbody>
</table>

The meaning in designs may remind users of their history and culture. Designs have narratives for their users, and this helps the restoration of past memories (Table 20: Participant 15). Users can connect with their traditional values through the use of such designs, and this assists in the preservation of the society’s culture (Table 20: Participant 23).

Products are not passive, but operate as part of the intricacies of social relations, including identity formation (Chapter 2). Identity is deeply ingrained in the human psyche and cultural condition. Table 21 illustrates how product identity promotes “product acceptance.”
Table 21 Statements on identity that promote product acceptance (PAC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>...revive and reflect users’ cultural aspects so that they can maintain their integrity and identity.</td>
<td>PAC</td>
</tr>
<tr>
<td>9</td>
<td>...products should portray Botswana’s culture in such a way that it can easily be identified.</td>
<td>PAC</td>
</tr>
<tr>
<td>21</td>
<td>This product is seen as a marker of social identity.</td>
<td>PAC</td>
</tr>
<tr>
<td>22</td>
<td>...people are now concerned with their identity. This identity can be reflected in products they use and the designer is placed in a better position to satisfy this need.</td>
<td>PAC</td>
</tr>
</tbody>
</table>

Table 21 shows that products have an ‘identity’ value and not simply a ‘use’ value. Identity and meaning are beginning to be seen as key factors in adding value to products and services (Du Gay et al., 1997).

It has emerged in this research that in some cases functionality has been emphasised at the expense of the relationship between users and products (Appendix 7: Table A). This viewpoint is limited, when everything is considered, to the tangibles. It represents the outer layer of culture, thus overlooking the inner, core layers of basic assumptions, values, systems and institutions (Section 2.1). Such a focus means that design does not take account of the broader context within which it operates. The analysis demonstrates that design requires a capacity to understand and advocate an appreciation of and responsibility for the broader systems and cultural context underlying the problem structure. Design efforts should be aligned to users’ ways of living, ethics, values and norms in order to facilitate product acceptance. Products should no longer be seen as simply delivering a bundle of functional features and benefits; rather, they should provide experiences and what users want: products that dazzle their senses, touch their hearts and stimulate their minds (Hassenzahl, 2003).

8.5 Summary

This chapter has demonstrated the various factors that could be involved in postcolonial design which advances local thought in problem-solving. This means that postcolonial design should concentrate its efforts in addressing the identified socio-cultural factors, together with problems and needs associated with them. The socio-cultural factors of material, emotion, social practice and technology/design were integrated into design in
terms of functional attributes, signification, mediation, gender, aesthetics and knowledge. These features have assisted in the generation of novel design concepts. For example, traditional motifs, distinct forms, and indigenous materials were used to create new designs with meaningful product content. Drawing from the data analysis and interpretation of this chapter, the next chapter explores the major findings of the study.
Chapter 9

FINDINGS
9.0 Introduction

The findings of this work pertain to how culture can be integrated in design, in the generation of novel design concepts and in facilitating product acceptance. A culture-orientated design model has been developed to assist designers to consciously specify, analyse and integrate socio-cultural factors in designing new products. Socio-cultural factors can be used as a springboard for innovative design concepts; for example, the social context (nature) inspired the generation of novel concepts. The research findings indicate that cultural-orientated products have meaningful content that reflect users’ lifestyles and provide users with symbolic personal, social and cultural values.

9.1 Approaches towards culture-orientated design

The main thrust of this study is an attempt at formulating a theoretical basis to consciously integrate socio-cultural factors into the design process. This has been achieved by first developing a Botswana’s theoretical framework of cultural analysis and identifying relevant socio-cultural factors that impact upon design (Figures 5, 6, 7 and 8). The identification of these factors has assisted in responding to the first research question: What socio-cultural factors impact upon human-centred design in Botswana?

These socio-cultural factors were extracted from various sources such as verbal, textual and visual data (Section 8.2). The aim was not to restore the bygone past, but to draw upon the past and create a new future in terms of designing innovative concepts. In cultural relations, individuals and societies must seek to understand other cultures’ experiences, assimilating and interpreting those that bring them benefit in terms of quality of life, but preserving their cultural heritage and identities (Chapters 9 and 10).

Socio-cultural factors were embodied in design concepts by first learning about users’ culture and concerns (context). In addition to the direct interaction that takes place between users and designers, the designs themselves act as mediators that connect the designers and users (Figure 9). This communication is achieved through the interface, which portrays an image that has narratives and meanings for its users. Thus the meaning of cherished products is realised in a transaction between the user and product. The meaning attached to a product may be different in different cultures. Each culture has its own language, and language also mediates these different cultural perspectives (Section
4.2. A product must be appreciated and recognised by users (Lin et al., 2004). Users form a total image of a product instantly from its appearance, without pondering deeply over it. This image is heavily tied to its perceived form, which is thus a significant factor in drawing it to a user’s attention. A designer needs users as much as users need a designer, and both are essential to the creation of products because culture cannot exist without them (Figure 9).

![Figure 9 Integrating socio-cultural factors in designing products](image)

When inter-relating the themes which emerged from the identification of socio-cultural factors, it was found that the society’s problems or needs are rooted in social practice factors (Figure 10). Due to the limitations of certain products, it emerged that users could not perform some tasks to their maximum satisfaction. Therefore, appropriate manipulation of material and technology/design factors assists users to perform certain social activities with ease or enhances the performance of particular tasks. This leads to an expression of pleasure or appreciation of beauty in products.

![Figure 10 Socio-cultural factors: interrelationships and their applicability to product design](image)
The emotions attached to a product might be a result of its aesthetic qualities, its performance, the knowledge it generates or the message it carries. Nonetheless, emotional factors should be seen as fluid, complex and dynamic, and always in a state of flux. What might be exciting or fun today may not be tomorrow, and the opposite is true for something which is unattractive. In this case the expression of pleasure may be experienced through physio-pleasure, psycho-pleasure, socio-pleasure and ideo-pleasure (Section 6.3).

It is through the use of, and social relationship with, the product that socio-cultural factors become visible. Chapman (2005) argues that it is through immersion that products become known and wholly understood. The product becomes a mediator (Table 5) and creates a social communication link between users and their culture. The message embodied in such a product shapes and controls the scale and form of human association and action. Cultural products embody, reflect and mediate the views of the society from which they emerge (Figure 11). This is supported by Reinharz (1992:145) who stated that “cultural artefacts of any given society at any given time reverberate with the themes of that society and that era.”

![Diagram of mediation framework](image)

**Figure 11 Mediation framework**

In Figure 11, the user receives messages from the designer through the product. The product carries cultural messages by being encoded with a shared set of socio-cultural factors (symbols, form, signs, values, norms and beliefs) from traditional and
contemporary sources. Therefore, these sources act as mediators of socio-cultural narratives or as a “…mediator of human thoughts and behaviour” (Nardi, 1996:7). This introduces the concept of representation in products (Chapter 2 and 4). For example, symbols may convey commonly held cultural values, and can be used to gain greater power if emotional fervour is attached to them.

The design can be modified to make it more responsive to users’ needs based on their feedback (Figure 11). These needs may be utilitarian — intended for the purpose of performing physical tasks — or they may be expressive; that is, aimed at communicating personal, cultural and aesthetic experiences. Cultural needs are complex and often blend both utilitarian and expressive purposes. All this is influenced by the local socio-cultural context (Figure 11) in which the mediation is taking place through elements such as customs, values, norms and beliefs that users bring to their reading of form and symbol.

9.2 Culture-orientated design model

In order to consciously integrate culture at a conceptual design stage, a culture-orientated design (COD) model has been proposed (Figure 12). This model responds to the research questions in Section 1.3. For example, culture can be integrated in product design by assessing the users’ needs and their activities, incorporating advances in technology or evaluating existing designs. The COD model has been developed into three interrelated principles: categorisation of socio-cultural factors, integration and cherishable culturally orientated products (Figure 12). These were developed from the data analysis.
Key

**Socio-cultural factors**
SPF – Social practice factors  EMF – Emotional factors
MTF – Material factors  TDF – Technology/Design factors

**Integration phase**
MDT – Mediation  FNT – Function  AST – Aesthetics
SNF – Signification  GND – Gender  KLG – knowledge

**Cherishable culturally orientated products**
NDC – Novel design concepts  NPF – Narrative abstract product features
PAC – Product acceptance  PDI – Product image

Figure 12 Culture-orientated design model
Socio-cultural factors
The first principle involves the categorisation of socio-cultural factors and this is the users’ domain because it contains their social and cultural needs (Figures 5, 6, 7 and 8). This phase responds to the research question: What socio-cultural factors impact upon human-centred design in Botswana? Traditional and contemporary socio-cultural factors were combined and broken down into material, emotional, social practice and technology/design factors (Table 5 and Figure 12). These factors cover all the core layers of culture discussed in Section 2.1. In analysing folktales, Leedy and Ormrod (2001) underscore the view that traditional socio-cultural factors help people to understand what was previously observed, and this provides a foundation for extending to new experiences. Traditional socio-cultural factors are important because evidence from data analysis indicates that some cultural practices which are valuable to the society are disappearing and they need to be revived and preserved (Table 10). This model depicts the approach of bringing together traditional and contemporary areas of knowledge in design. 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.

Socio-cultural factors were used as a way of uncovering — or at least shedding light on — users’ social, emotional and aesthetic values and habits. Extracting socio-cultural factors from secondary sources will be incomplete without conducting user research into their socio-cultural context (Section 5.1 and Figure 11). The user research assists in gathering and determining user 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). Different data collection methods can be used to gather information about users; such methods include conducting interviews, focus groups, user observations, and ethnographic research. Feedback from users should be incorporated at each phase of the model, which helps to ensure that the concept maintains a focus on real users’ needs throughout the design process. Evidence from the data analysis suggests 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 (Figure 11).

**Integration phase**

The second principle that addresses the research question deals with how socio-cultural factors can be integrated in product design. This is the designer’s domain because he/she needs to interact with users to draw from their experiences and feedback in order to transform socio-cultural factors into culturally acceptable product features. A focus on the sensations, feelings, aspirations and social relations that arise through users’ interactions with products inevitably strengthens the humanness in the design. It is through different modes of social interaction that users and designers explore the properties of products. Socio-cultural factors can be transformed into functional features, signification, knowledge, mediation, gender, and aesthetics features (Table 5 and Figure 12). A product will deliver to users more than one of these properties, and at different levels. For example, if the product’s outcome is to promote relationships among users, then more emphasis has to be paid to mediation (Figure 11). This approach ensures that designers truly focus on the users’ expectations. In the concept development stage, metaphor, allegory and analogy can be employed to transform cultural meaning into product features. The integration phase also involves consideration of all features which constitute a novel design concept (Table 2).

**Cherishable culturally orientated products**

The last principle consists of the output that is cherishable in culturally orientated products (product domain). The focus of this model has two elements: the first is to generate novel design concepts that are linked to users’ social and cultural needs; the second is to design concepts with a recognisable product image embedded with intangible narratives that can facilitate users’ acceptance (Table 5 and Figure 12). A product should have a specific product image based upon symbolic personal and social values. It should project a slightly different metaphor and meaning for everyone who uses it. Related to this is that a product’s interface is essential to understanding the product, and that products act as expressions of a user’s identity and aspirations.
In summary, a culture-orientated design model should provide tactile quality, symbolism and a story that gives products value and meaning. In this context, postcolonial designers should act as culture builders as well as catalysts for change (Section 5.1). It has been demonstrated how socio-cultural factors were integrated in product design; the next section examines how the same can be used to generate novel design concepts.

### 9.3 Cultural product innovation

The focus of this section is on addressing the research question that asks: *How can socio-cultural factors be integrated into designing products?* This seeks to investigate how socio-cultural factors can be used to generate novel design concepts. Figure 13 summarises the features that were used to generate novel design concepts. Those features are constituents of a novel design concept (Table 2).

#### Figure 13 Generation of novel design concepts

![Generation of Novel Design Concepts (NDC)](image)

**Key**

1. Sustainability  
2. Functional values  
3. Creative values  
4. Aesthetic values  
5. Indigenous knowledge  
6. Technology values  
7. Human factors  
8. User values

Figure 13 shows that novel design concepts were inspired mostly by creative values, aesthetic values and indigenous knowledge.
**Creative values**

Evidence from data analysis (Chapter 8 and Figure 13) indicates that novel design concepts were generated using the bisociative attraction technique; that is, the association of two known ideas which have not been connected previously. Bisociation occurs when two unrelated ideas collide in a way which jars or surprises users’ normal powers of association and gives rise to humour and pleasure. The surprising association of an idea is what drives the original concept in a design (Section 5.2); the more unexpected the result, the more intense will be the pleasure (Hassenzahl, 2003). Pleasure triggers positive emotional reactions, such as when users find the product appealing, attractive, inviting and pleasant to watch and use (Figure 7). This has resulted in product innovations which establish new visual forms (Section 5.2). In a culture like Botswana’s, if one sees a clock that looks like a traditional hut, or a thumb piano that looks like a canoe, the reaction might be that it is fun that the product connects with the personal meaning attached to a hut or canoe (Appendix 6). This brings familiarity to the design and renders its newness understandable.

**Aesthetic values**

Emotional factors, such as the use of elements of traditional aesthetic values, created novel design concepts (Figure 13). This socio-cultural factor may be used in designing for a novel aesthetic appeal, by symbolising values and cultural traditions, and at the same time fulfilling functional and decorative requirements. Local symbols, motifs and patterns were used as visual clues in creating well defined design concepts (Appendix 6). It emerged from the analysis that tried and true historical forms, paradigms, and archetypes were borrowed from nature, and were then tweaked with ironic juxtapositions, new materials, subversive details and other internal breaks with tradition and expectations. Traditional features now “…act as a stepping stone to new design ideas” (Appendix 7, Table E: Participant 17).

**Indigenous Knowledge**

The social environment played a major role in influencing the generation of “novel design concepts.” Analogies from nature were used as design solutions. Nature possesses
a wealth of historical imagery (Moalosi et al., 2006), and introduces an era based on what can be extracted and learnt from the natural world. Forms, shapes, colours and patterns were borrowed from nature for design improvements. Visual and tactile cues emerged from landscapes, animals and vegetation (Figure 13). For example, texture and patterns of the Personal Digital Assistant (PDA) resemble the patterns of a zebra (Appendix 6). Apart from the zebra’s beauty, it is the national animal in Botswana, and people accord it some respect. Patterns and texture emphasise the love of natural forms and the co-existence of people, land and wildlife (Yang, 2003). This kind of finish breaks the uniform and mechanical mode, giving life more interest and recreation (Moalosi et al., 2006). It is a hybrid of traditional and contemporary features. A natural element in industrial life has been introduced, leading users to pay more attention to their co-existence with other species in harmony with the ecosystem (Figure 13). This co-existence has been examined during the analysis of folktales (Section 4.3). The use of such finish “…defines true African beauty” (Appendix 7, Table E: Participant 19).

This provides a good example of the role of beauty, order and arrangement in making aesthetic judgements in the local context, as well as a representation of cultural values and identities. Pleasure, fun and beauty all work together to produce enjoyment and a state of positive affect. Beauty comes from conscious reflection and experience, and is influenced by knowledge, learning and culture (Norman, 2004). The visual and tactile elements of colour, pattern and texture can bring gratification to users’ experience. “They compel users’ to look and touch and this evoke cultural association” (Appendix 7, Table E: Participant 19). This aesthetic appeal provides a cultural visual entertainment for users. Cross (2002) and Stacey et al. (2002) argue that a novel concept should be influenced by the broader culture that defines spaces of acceptable products (Section 5.2).

**Sustainability**

Designs from nature promote users’ quality of life by instilling consciousness about the environment (Table 2). Novel design concepts should be sustainable, as argued in Section 5.2 and Figure 13. Participants recognised the value of depleted resources and the cost of pollution and diminishing biodiversity. This focussed on how socio-ecological issues are
relevant to the users’ everyday life. The designs were mainly made out of appropriate bio-based materials such as wood, leather, horn, and ostrich egg shells. These materials are biodegradable and have little impact on pollution and the environment. In this context, sustainable design moves away from extractive and disposable products that are energy intensive, resource inefficient and toxic; rather, they tend towards cyclical, closed-loop products that are restorative, dynamic and flexible. However, Perspex, brass and aluminium were used in some designs, and these materials can be recycled and reused in different contexts.

**Technology values**

Mechanisms were used to design novel concepts (Figures 12 and 13). For example, a traditional chair-cum-stool was used in the experiment as both a chair and a stool. The chair’s backrest has a mechanism which enables it to flip forward so that the whole device becomes a stool: “…a traditional chair has a good mechanism for folding and unfolding for easy carrying and packaging” (Appendix 7, Table E: Participant 12). Here, a mechanism was used in an innovative way to design a new stool and chair, blending synergy with familiarity. Synergy in this case involves the combination of known product features in new ways. Therefore, the synergy is new but the features of that synergy are old (mechanism) and the product itself (stool/chair) is familiar. This is known as *epochal innovation* by establishing new or better ways of a seating arrangement in terms of functionality or ergonomic implications (Section 5.2). It ensures that the design concept is creatively done and remains original, but provides new impressions, opportunities and insights.

**User values**

There is strong evidence that incorporating socio-cultural factors in design can lead to the generation of novel design concepts which are related to users’ culture (Figure 13 and Appendix 7: Table F). The study has confirmed that culture can be used as a source of innovative design concepts. This viewpoint is shared by Gaver (2001), who points out that culture provides a rich and varied set of materials, which inspire new design ideas that connect with user’s traditions (Section 5.1). Based on the evidence from the data
analysis, socio-cultural factors should be treated as a source of pride and a springboard for new and unique design concepts (Appendix 7: Table F). This may not only improve the function or appeal of the design concepts, but will also ground design in the users’ culture. The pinnacle of good product innovation occurs when it is grounded on a sensitive cultural analysis of users’ culture. Culture-orientated innovation such as this could enable designers to see the world through the eyes of users (Section 8.0), thus helping them to better appreciate the product.

### 9.4 Culture-inspired product acceptance

One of the foci of this research is to investigate how socio-cultural factors can facilitate product acceptance (Section 1.3). Figure 14 summarises those features which may facilitate product acceptance and need to be built into the design of new products in the early stages of the design process. These features emerged during the data analysis of product acceptance (PAC) segments.

![Facilitating Product Acceptance (PAC)](#)

**Key**

1. Relevant emotional factors  
2. Localisation of concepts  
3. Product meaning  
4. Product relevance to user’s culture  
5. Product identity  
6. Gender appeal  
7. Traditional aesthetics

Figure 14 Facilitating product acceptance
Figure 14 shows that products may gain full acceptance if they are relevant to the users’ culture, reflect gender appeal and portray users’ identity; this might result in products which have meaningful content about the users’ culture.

**Product meaning**

Postcolonial designs conceived from a socio-cultural perspective may provide users with cultural meaning which facilitates their acceptance (Figures 12, 14 and 15). Response to products often produces a mixture of intrinsic and extrinsic meaning. A product cannot express its own meaning; meaning must be constructed, given and produced through social discourse and socio-cultural practices (Section 4.2). In this instance, meaning was produced through encoding designs with symbolic significance as discussed in Chapters 3 and 4. Meaning provides an essential foundation upon which arousal and emotion are constructed (Chapman, 2005). Products are no longer seen only as functional objects; now they are seen for what they symbolise: their meaning, association and involvement in building a user’s self-image. They should not only have form and function, but also have “content” that is meaningful for the users (Manzini and Susani, 1995).

The data analysis has revealed four layers of product meaning: material, social, emotional and technology/design (Chapter 8). Meaning can be expected to vary because of the different priorities and emphases given to values that exist from one social group to another. Meaning represents the potential of a broader social agreement about formative expressions. This occurs where social groups share enough of the core values expressed in a product. Different expressions, emphases and qualitative preferences evoke different responses and have different shades of meaning (Figure 15).
Meaning is culture-specific and resonates deeply with users’ experience; it also changes with time and circumstances (Figure 15 and Appendix 7: Table G). The four layers of meaning are fundamentally interpenetrating and mutually constitutive; that is, they complement each other to form an integrated whole. The analysis has demonstrated that material meaning is related to the possession of tangible products that can be used as signs of self-expression or identity (Section 8.4). Social meaning is concerned with what the product does for the user (rituals performed by the product). Products can assist in the formation of social relationship with other social groups. For example, “products make one connect with history or his/her roots …in that way, our culture will never be lost” because products carry informative messages and keep the society’s history and traditions alive (Appendix 7, Table G: Participant 19).

A product’s functionality leads to its emotional or spiritual meaning; that is, the gratification derived from using such a product (Section 9.4). Technology/design meaning is related to how the artefact was conceived, as well as showing the type of technology incorporated in the product (Section 3.2). This layer of meaning is more appropriate for expert users, and serves as a base for new product development. This approach aims at influencing the users’ identity, or future culture, by proposing solutions from both design and cultural considerations. Consequently, this can be a powerful tool in establishing a consistent users’ image (Figure 13).
Localisation of design concepts

The localisation of design concepts has led to designs which are in-line with users’ lifestyles (Figures 12 and 14). Studies conducted by Samsung, Nokia, Electrolux and Whirlpool (Section 5.2) support the concept of localisation as it is viewed as a counter-balancing force against a neo-liberal form of globalisation (Appendix 7: Table H). Culture-orientated designs act as mirrors of users’ lifestyles. These designs portray users’ identity while at the same time reflecting their norms and moral values (Section 5.1). The intent of localisation of designs was to reflect in-depth knowledge of the local user’s cultural context. This was achieved by incorporating unspoken and unconscious characteristics of users. Unspoken characteristics include local rituals and customs, whilst unconscious rules involve values and belief systems (Section 2.1). These characteristics were transformed into common local symbols, motifs, colours and imagery that build a closer identity with the local culture (Appendix 7: Table H). This ensures that local designs are highly specific and engages local users in a manner to which they have become accustomed.

Product identity

The identity of users was portrayed through the designs, which were designed by taking into consideration the users’ social environment (Figure 14 and Section 8.3). Artefacts are a means of social identification and differentiation (Krippendorff, 2006). In support of the former, Manzini and Susani (1995:156) suggest that,

products that are relevant to specific needs should be given cultural significance and value for the user, meeting the user’s need to express his or her personal identity as part of the quality of their life as an individual.

The postcolonial designs reflect the traditions and values of the society and express social meaning in term of who the users are (their history), to whom they are connected socially and their future aspirations. They also act as powerful memory cues; that is, they can remind the user of past achievements and relationships, and can become concrete manifestations of users’ biography (Chapman, 2005). Such designs may enable users to have a social affiliation with others. Identification with a “valued other” enhances self-
esteem and self-concept (Bourdieu, 1986). To counter this globalising and homogenising world in which local identity is increasingly being threatened (Du Gay et al., 1997), locally recognised symbols can be used, which enhance Botswana’s identity and distinctiveness (Chapter 8).

**Encoding relevant emotional factors**

Above all, products that act as “mediators” create a spiritual bonding with users (Appendix 7: Table I). Spirituality has been used as a source for cultivating a sense of what is worthwhile to human welfare and life enhancement, seen in relation to the individual and humanity as a whole. It links design to a process of social improvement that becomes the material counterpart of spiritual development. More and more users buy objects for intellectual and spiritual nourishment (Chapman, 2005). This indicates that appreciation of pleasure in product use is becoming of primary importance, and users are demanding products that strike a certain emotional chord. However, Participant 19 (Appendix 7, Table I) cautioned that, “if cultural factors are not incorporated, products will offer weaker interaction attributes with users.”

**Gender appeal**

The gender appeal of products has been identified through the coding process as one factor that facilitates product acceptance (Figure 14). Product features should define the gender appeal of their users. The embodiment of physical and non-physical features differs according to gender; for example, Appendix 7 (Table J) indicates how features on gender appeal could foster product acceptance. There are designs that have been targeted for one or other of the sexes, and those that target both (“unisex” designs). Unisex designs go beyond product association, and destabilise or denaturalise the power of identities such as a male’s product or female’s product. They strike a balance with regards to the product appeal for both sexes.

Based on the evidence of this research, it emerged that consideration of socio-cultural human factors has enabled a broader scope in design thinking (Appendix 7: Table K). This wider scope of thinking has assisted designers in being sensitive to users’ culture
and at the same time designing appropriate cultural-sensitive products. For example, “this idea was inspired by socio-cultural factors and if we were not introduced to them, I do not think I will have designed this artefact” (Appendix 7, Table K: Participant 16). The challenge is to go beyond the obvious, and venture into the unknown.

There are, however, problems associated with this approach. Most local designers may not be aware of the culture-orientated design approach (Appendix 7: Table L). This challenges curriculum developers to decolonise the education system so as to consider and appreciate the local culture (Chapters 2 and 4). For example, DeLarge (2004) questions why storytelling is not viewed as a design tool whereas there are a lot of commonalities with the human-centred design approach (Section 4.3).

The lack of awareness of this approach creates a gap in knowledge for the local designers. This is supported by the problems facing the Rural Industries Innovation Centre and the Botswana Technology Centre (Section 6.1) which have demonstrated a lack of local relevance in the products they design. This means that local designers should start to appreciate the role played by culture in design practice, and should utilise social, cultural and local materials that may inspire product innovation (Appendix 7: Table L). This marks a paradigm shift on how postcolonial design is perceived.

In a globalising world where every place begins to feel and look the same, it is cultural products and activities that mark out one place from the next. It has been observed that the difference in this case creates a competitive advantage. Cultural-orientated innovation allows the exploitation of the cultural and geographical uniqueness in response to users’ demands for more differentiated products. These products enhance users’ experience; that is, matching their needs and expectations to key elements and features of the products.

**9.5 Summary**

The conclusion that can be drawn from this chapter is that familiar product features may be borrowed from nature because it provides much symbolism. In this study, product design features were drawn from traditional artefacts, local aesthetics, fauna and flora.
They may be combined with technology/design factors such as the incorporation of mechanisms, hydraulics and electronics in order to enhance the functionality of such products. Another technique used was to associate two unfamiliar ideas which have never been connected before. In the process, this may result in novel design concepts. It is important for products to emphasise an appropriate aesthetic appeal. Users will see the product first, before they can “switch it on” (Pugh, 1991). Therefore, an elegant, unique appearance is important to attract users to the product before they can learn how to operate it. The next chapter discusses the main theoretical contributions of the study and concludes the thesis.
DISCUSSION AND CONCLUSIONS
10.0 Introduction

The main theoretical contributions of the study include developing a culture-orientated design (COD) model which can facilitate the incorporation of socio-cultural factors in product design (Figure 12). The study’s aim was attained by carefully analysing, identifying and incorporating those local factors that users cherish, and at the same time embracing important global values in designing products. This model enables one to assess how different elements of culture interconnect in the conceptualisation of products with local relevance. It has surfaced that lack of a design policy in Botswana obscures the development of the design profession. The findings indicate that innovative design concepts were inspired by nature, blending traditional and contemporary features and encoding traditional forms. Such concepts may appeal to users at an emotional level and facilitate product acceptance. The study indicates that design concepts act as cultural mediators of new knowledge. This chapter concludes by outlining the limitations of the study and identifying emerging future research areas.

10.1 Main theoretical contribution of the study

There has been little in-depth research conducted on this topic, except for a few related studies which acknowledge the importance of culture to product design (Manzini and Susani, 1995; De Souza and Dejean, 1999; Gaver, 2001; Yang, 2003; Norman, 2004). The study has attempted to raise pertinent issues facing product design in Botswana and other new emerging economies. Such issues, to name but a few, include lack of a concrete theoretical design and cultural framework which has been taken for granted for so long, and this has resulted in emulating the Western design concept without much due regard to the local context (Section 4.1). The socio-cultural framework developed in this study defines the key elements of Botswana’s culture (Chapters 2, 3 and 4) and how they can be made applicable in designing cultural-orientated products (Figure 12). This model develops knowledge and confidence to challenge the dominant Western culture in Botswana’s design practice and advance local thought, content and solutions. The study has addressed the gap in the literature because it proposes one way of specifying, analysing and integrating socio-cultural factors in the early stages of the design process.
The culture-orientated design model (Figure 12) is offered as a view that is complimentary to, rather than an opposing view of, existing design methodologies.

The socio-cultural factors in Figures 5, 6, 7 and 8 serve as a starting point for compiling a Botswana socio-cultural database. An in-depth study of this area needs to be undertaken so that a comprehensive online database can be compiled, which might assist designers’ endeavours in integrating users’ culture. This process will help in developing new design guidelines that include culturally appropriate data because any designed concept should reflect the users’ culture.

It has been demonstrated that the strengthening of the globalisation process has intensified the international competitiveness strategies, and this has affected the design of products (Chapters 2 and 5). Product design is faced with impasses between catering for imperatives of standardisation of components and products, and the consideration of aspects of cultural identity. Elements from other cultures can be adopted while still ensuring localised identity. Fuhrer supports the latter viewpoint by saying, “In times where globalisation, rapid societal change, migration and multiculturalism are growing, the increasing hunger for identity is remarkable...” (2004:79). The basic principles of design should be grounded in the society’s spiritual and cultural ideas (Buchanan and Margolin, 1995). Other researchers (De Souza and Dejean, 1999; Margolin, 2002; Norman, 2004; ICSID, 2002) acknowledge the importance of culture to design but they do not go beyond suggesting ways of how this can be achieved.

Papanek (1984:227) argues that “large scale design in developing countries by outsiders has never worked.” Moreover, “design strategies that go against the ecological wisdom of a culture are likely to fail” (Krippendorff, 2006:205). The observations made by these authors demand a new approach to design education, theory, research and practice, especially from new emerging economies such as Botswana’s. Therefore, the culture-orientated design model (Figure 12) has provided a point of departure for new design knowledge and new strategies in design thinking (Chapter 9). Cultural knowledge could enrich contemporary design theory and underpin creativity and innovation in design
practice. The study serves as a design tool that connects users’ heritage and an unfolding future.

On critically analysing the art of storytelling, it has been demonstrated that there are a lot of commonalities with the design process (Section 4.3). The point of focus in storytelling is the listener, whilst in the human-centred design process it is the user. The storyteller makes efforts to capture, accommodate and maintain the interest and aspirations of the listener during the narrative experience. Evidence from the literature (DeLarge, 2004) suggests that designers sometimes overlook the need to focus their efforts on users’ cultural needs (Chapter 6). Due to these commonalities which designers have often overlooked, it is proposed that storytelling might be used as a design tool in teaching design.

Traditional storytelling as a mediator of socio-cultural narratives is in rapid decline because designers fail to utilise them effectively in their practice (Chapman, 2005). “Anyone seeking success in the market of the future will have to be a storyteller” (Jensen, 1999:39). Jensen asserts that all products are stories waiting to be told and the prize goes to the person who tells the story most convincingly. This challenges designers to be master storytellers and their tales should appeal to and resonate with users. Stories can be a management tool for facilitating communication and creating a common ground of understanding between designers and users. They can be a way of attracting, sustaining and persuading users and bringing them around to the designer’s way of seeing a problem and thinking through a solution. Therefore, stories invite a dialogue and engagement of users. Then users can contribute their own content to the story/product and thus become its co-producers. Stories give emotional context and perspective to a design problem (Denning, 2001).

Sharing stories inspires both designers and users to act as catalysts for innovation, revealing new design pathways and triggering specific strategies related to product design and development. For example, narratives in this study were used to create users’ identities and structure their experiences. These activities in design are important because
they play an essential part in developing creative concepts. This study has demonstrated that postcolonial designers need to be more conscious about the art of storytelling and how they can use it more effectively in communicating their key ideas and visions.

One of the factors that hinder designers from effectively using stories in their design practice is the lack of in-depth research. Consequently, the proposed culture-orientated design model (Figure 12) provides a way of consciously incorporating socio-cultural factors and at the same time humanising technology. It serves to contextualise design not for academic purposes alone but also to allow designers themselves to see their task in perspective and to question some of the narrow assumptions they have inherited about their cultural role in the educational system and the society at large. The challenge facing Batswana 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 users’ 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).

However, the culture-orientated design model (Figure 12) does not guarantee innovative solutions that are cherishable and culturally sensitive. Innovative solutions depend on factors such as creativity and empathy combined with the ability to visualise and specify concepts in some kind of material form. Creativity and ingenuity are essential requisites to cultural-orientated product design. Conversely, culturally innovative solutions only become a breakthrough when users place a high value on them.

It has been underscored that Botswana does not have a national design policy (Section 1.6) and this is a serious flaw. If such a policy is put in place, it must pay attention to the local culture. The importance of culture on design cannot be over-emphasised; this has been thoroughly discussed in (Chapters 5, 9 and 10). The current arrangements, where issues affecting design are captured in the National Policy on Culture and the Science and Technology Policy are not helpful and obstruct the development and independence of
the design profession. This does not provide Batswana designers with clear guidelines on how the profession should develop. The critical challenge is to urgently formulate a comprehensive policy on design. This study could be used as a basis to draw socio-cultural issues for such a policy.

However, designers seem to be unorganised because there is no forum where they can articulate their concerns. “A designers’ or innovators’ guild must be formed with the objective beyond facilitating a meeting of minds, but to encourage and reward innovation, thus serve as a pull factors in the future innovations in the country” (United Nations Development Programme, 2005:68). Lack of such a forum and policy might be a contributing factor as to why Botswana Technology Centre and Rural Industries Innovation Centre duplicate each other activities (Section 6.1).

Even though analysing products designed and developed by Botswana Technology Centre and Rural Industries Innovation Centre was outside the parameters of this study, it has emerged that one reason for their products being unsuccessful in the market is that they do not adequately capture users’ culture (Chapters 5 and 7). In one way, this study has partly responded and contributed to A framework for a long term vision of Botswana 2016 (1996) which identified the need for the existing centres for research and development to be strengthened and focussed, so that their output is relevant to the development needs of the country (Section 1.6). Moreover, the United Nations Development Programme (2005:2) proposed that one of the areas of priority for the future should be the “development of research and innovations systems for Botswana.” The two centres’ research and product development efforts should be more concerned with breakthrough innovations rather than modifying existing designs to fit the local context. In this way, they will be complimenting the government efforts of diversifying the economy and deriving maximum benefits through intellectual property rights from their designs.

Botswana’s economy relies mainly on diamonds (Section 2.4), and the government efforts of attracting foreign direct investment as a means of diversifying the economy has
not paid much dividend (United Nations Development Programme, 2005). Design education should be contributing to adding value to these precious stones in the form of jewellery design but this is not the case at present. However, the recent initiatives between the government and DeBeers Mining Company to liberalise the diamond trade will in the long run benefit design, and this will contribute to the diversification of the economy from over-reliance on minerals.

There are opportunities in the design of culture-orientated products for the tourism industry, for export and for the local market. The growth of the tourism industry in Botswana is offering new challenges for local designers (Section 2.4). Wildlife tourism is forecast to be the next engine of the economy as opposed to minerals. Design education has a lot to contribute, especially in the design of cultural-orientated products for the local market, for the tourism industry and for export (Section 8.2). In support of the latter, the Botswana National Research, Science and Technology Plan (2005) identified the development of new products for the tourist market which should harness traditional creativity and innovation as a priority area for research. In this way, design can contribute effectively to the government’s failing efforts to diversify the economy. Culture-oriented products provide users with artefacts that have narratives and fantasies around them, as well as benefits (Moalosi, 2005a). This notion may give Botswana a new dimension of product competitiveness in the global market. It may enable local designers to exploit their cultural and geographical uniqueness in response to a global demand for more differentiated products. In a reaction to globalisation, an opposite trend is emerging, which promotes local identity, and highlights cultural values and traditions (Chapter 5). The global process of homogenisation may provoke people to be more aware of their national and cultural identities (Fernandes, 1995). That is, globalisation has sparked off a new awareness of local identity. In support of this, Fernandes, Manzini and Susani (1995) argue that when society and individuals are increasingly realising what it means to live in a limited and interconnected world, what is emerging is not a unified global society but an exasperated search for identity, both individual and collective. This trend is a force that provides new opportunities not only for tourism and export, but also for the local market.
The concept of hybridisation (Chapter 2) is used to blend traditional and contemporary socio-cultural factors. Traditional socio-cultural factors are important because they provide the necessary base on which to build new experiences. The blending of socio-cultural factors has resulted in authentic, meaningful, innovative and cultural-orientated solutions (Section 9.2). The combination of contemporary ideas with century-old ideals establishes a concept coveted by users who seek innovation grounded in a rich and unique tradition (Hirano, 2006). The concept of hybridisation acknowledges that culture is dynamic, but that traditional values are also important and need to be preserved. An important aspect of hybridisation lies in the construction of personal, social or cultural identity, taking place in the strain between the local and the global; consequently, it reinforces social cohesion. The combination of the ascetic exclusivity of Batswana and the mainstream, progressive pulse of modernisation could produce products with long-term domestic and international appeal.

It has been demonstrated that culture can be used as a resource of information and a source of inspiration for product innovation (Chapters 9 and 10). In order to achieve product innovation, design features were borrowed from traditional symbols, forms, motifs, paradigms and ecosystems to come up with novel design concepts. Participants used the bisociative attraction technique to give design concepts humour and pleasure. This made the designs original and innovative within the local socio-cultural context. The use of these traditional elements not only makes design concepts innovative, but also adds emotional and aesthetic value. They evoke cultural association and spiritual attachment, and bond users to the designed concepts. Users over the years have moved from material affluence towards valuing spiritual fulfilment (Hirano, 2006). This enables design concepts to appeal, excite, satisfy and induce some level of interest (Figure 7). The concepts become aesthetically acceptable and culturally appropriate, and ultimately lead to immersive experiences.

The findings indicate that nature is one source of concepts for the generation of novel designs. From an African design perspective, nature is treated as a database of solutions that already work (Appendix 7: Table F). Shapes, patterns, forms and colours were
extracted from nature to produce innovative design concepts. The analogies from nature were applied to provide inspiration as a precursor to innovation (Appendix 6). These features convey commonly held cultural values.

All cultures have symbols that elicit favourable emotions shared by their members (Chapman, 2005). Personal experience and emotional meaning complete the image of the product whose appearance and function are initial cues to its broader meaning. The more the user consciously or unconsciously relates to the aesthetic, cognitive and symbolic qualities of a product, the more profound will be the attachment. Emotional responses provide the foundations of individuality, and they are what distinguish between users. Products provide triggers for this vital sociological process to occur. Design is the vessel through which the benefits of cultural fulfilment and contemporary technology can be combined to create the ultimate user experience (Hirano, 2006). Therefore, local designers may need to assume determinant roles in the translation of symbolic, practical and technical requirements for users because they are directly and intimately linked to local realities, as well as to cultural references of societies to whom products are directed (Chapter 8).

It has emerged from the findings that products act as mediators of users’ culture (Figure 11). The concept of product mediation and its theoretical construct has been transferred to products being mediators of knowledge (Kuutti, 1999). Product mediation is a way of transmitting cultural knowledge (Kaptelinin, 1996). Artefacts carry meaning and a designer’s task is to match the expressive qualities of the products to the receptive characteristics of the user’s culture. Such products offer a better connection between individuals and their lifestyles (Appendix 7: Table H). This leads to immersive experiences which play a role in forging strong attachments between users and products.

Material products are increasingly becoming communicators of socio-cultural values (Figure 11). The findings show that decoding of common values, norms and opinions that exist in the users’ culture can be reproduced in material forms that embody the appropriate symbolic meaning (Figures 12 and 14). This establishes in a cultural way, a
vast array of different possibilities, constituting symbolic signs that remind users of past events, emotions and experiences, and bring forth meaning to social relations as well as reference to users’ identities. This information was validated by users’ feedback when the designs were tested. Product meaning provides the uniqueness, continuity and consistency that is vital to the formation of users’ identity.

Acceptance of global products has been easier in products without strong cultural references, such as those from the information technology area (Ono, 2002). However, Ono argues that this situation does not occur in products such as home appliances that have strong cultural references. From the outcome of interviews conducted, users alluded to the fact that cultural-orientated products can facilitate product acceptance. The findings indicate that such products portray a representation of users’ lifestyles (Appendix 7: Table H). This shows that a concept encoded with local features is one way of localising Western design concepts rather than developing solutions which are abstracted from users’ daily needs (Appendix 7: Table G). Therefore, these design concepts have narratives which locals can understand and appreciate.

No matter how innovative and beautiful the product is, if it fails the acid test of user’s acceptance, then it will be a wasted design effort. It is therefore important to avoid wastage of time, money and resources by identifying, at an early stage in the design process, those features that are likely to facilitate product acceptance. Such features include identity, meaning, traditional aesthetics and spiritual bonding (Section 9.4 and Figure 14). In all, the designer’s task is not only to design useful and usable products but to encode cherishability (Chapter 6; Figure 2); that is, to design concepts that connect culturally and emotionally with users and as a result facilitate product acceptance. This will in the long run provide users with products that have greater narrative stamina, enabling their stories to unravel over a period of years rather than just a handful of fleeting days.

To create cherishable user experience, designers need to study users’ concerns in the social context in which they interact with products (Section 8.2). By interacting with
users in their natural habitant, designers can uncover and gain insight into users’ beliefs, behaviours, needs, perceptions, desires and values. When a product appeals to a user, it does so relative to his or her cultural framework, worldview and daily experiences. Consideration of these factors has resulted in the generation of design concepts with deeper local values combined with symbolic, semantic and functional attributes that resonate with the urban, rural, disadvantaged and poor communities of Botswana (Chapters 3, 9 and 10).

The study strives not only to create design concepts that combine tradition with contemporary technology to satisfy the needs of the users, but also to achieve a new way of approaching the development of design concepts from the perspective of culture. The products that users own and employ daily are more than just objects; they are also a reflection of a microcosm of the users’ broader culture. The ultimate aim is to create a framework under which modern Botswana products and ideas can be developed in the long term. This is one way of improving, unifying and rearranging the image of traditional Botswana into positive and progressive ways. In the process, indigenous subject matter can be developed. The study supports the view that by managing the image consistently and by clarifying and establishing a realistic identity, socially positive products and concepts can be achieved.

10.2 Contribution to knowledge
The main contribution to knowledge made by this research relates to the advancement of professional design practice and the strengthening of design education. The implications of the study are that culture-orientated research provides new knowledge and ways of thinking and dealing with design issues; thus, it lays the groundwork for improving creativity and erecting the structure for increased product innovation. It further ensures that design solutions match users’ needs, abilities and desires.

This study has attempted to contribute to the building of design knowledge in Botswana and other new emerging economies where design is in its initial development stage. It brings culture to the attention of designers, design students and design educators in order
to provide them with the foundation by which they can serve the society with cultural-orientated products which are held in high esteem. Such knowledge is very important to these practitioners as it has local relevance to indigenous design, and has the potential to result in the creation of better-informed and more-critical design practitioners.

From the academic perspective, the study can be used as a vital design resource for strengthening the design programme at the University of Botswana and other design programmes in newly emerging economies. It fosters an appreciation of the local culture in problem-solving. Academics, designers and design students will recognise and acknowledge the role played by culture as a point of difference in design and a source of design innovation at an early stage in the design process. This might improve or deepen practice, because academics will be assisted in understanding how to integrate culture in product design through the proposed theoretical design and cultural framework. Guiding and nurturing students’ abilities to tap into the user experience are important steps in teaching them to create products and systems to which users can become attached on emotional and cultural levels. This is one way of decolonising design education from the current predominately Western values, and recognising the indigenous voices in the formation of postcolonial culture.

The culture-orientated design model (Figure 12) provides a new way of addressing socio-cultural issues in design. The model assists in identifying relevant socio-cultural factors that can be used in product design, as well as offering strategies of how they can be integrated in the early stages of the design process. This ultimately leads to the design of novel cultural-orientated products that reflect users’ culture. The model has addressed the gap in the literature were researchers (De Souza and Dejean, 1999; Margolin, 2002; Ross, 2002; ICSID, 2002) merely acknowledged the importance of culture in design but did not go beyond suggesting strategies for incorporating it. This model is transferable to other domains such as architecture, interior design, human computer interaction and graphic design.
10.3 Limitations of the study
The study lacks professional and industrial input from practising designers because participants were drawn only from the student body. However, this limitation will be overcome in the next phase of the study, when the proposed culture-orientated design model (Figure 12) is validated in the design and development of commercial products. The study was limited to finding and refining a methodology for incorporating culture at the initial conceptual product development stage, rather than creating commercial products.

10.4 Future research areas
This study has provided a foundation for further research work and will provoke many questions which will need answers that are beyond its scope. One potential area will be to validate the developed culture-orientated design model (Figure 12) in an industrial environment by designing and developing commercial products. The research will be based on how socio-cultural factors have been incorporated in those products, their cultural innovativeness and acceptability.

An additional topic for research involves investigating how culture can be used as a source of innovative, sustainable design concepts. Users are now more environmentally conscious than before, and they are demanding sustainable solutions to their problems.

Another important area which has been identified in this research is that products need to appeal at a deeper level to users’ emotions if the products are to gain full acceptance. Users’ emotions are inherently linked to culture, so culture might be used as a catalyst to enhance user emotions in product design.

A further study could test the feasibility and potential transferability of the culture-orientated design model (Figure 12) to other cultural contexts, especially those of other new emerging economies.
10.5 Summary

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. The input from socio-cultural factors is insufficient to generate culturally innovative and acceptable solutions; one also needs to incorporate data from physical, cognitive and emotional human factors. The challenge is to create designs that users will want to keep, maintain and use for longer periods of time. Such products should be designed with empathy, and created in an artful way that engenders powerful emotional attachments, involves rich narratives, and excites intense user experiences.

The study proposes that, to design cultural-orientated products that attract users, the answer lies in a carefully managed human-centred design process that cultivates a useful, usable and cherishable user experience from the perspective of users in their local context. A human-centred design process ensures that products meet users’ needs and expectations by iteratively studying and actively involving users throughout the design life cycle. The blending of the human-centred process and cultural considerations ensures a deeper and more locally relevant user experience. Such a design model allows cultural identity, meaning, values and tradition to be truly integrated and conveyed.

Based on the application of this model, designed products may satisfy users’ needs beyond the merely functional requirements; they may include users’ aspirations, emotions, aesthetics and socio-cultural needs, and be environmentally appropriate. This enables designers to create cultural content that provides users with lasting gratification, entertainment and information, while also involving them intensively, emotionally and intellectually (Section 6.2). Users’ involvement in the design process establishes a symbiotic relationship with designers, similar to the bond between storytellers and their listeners (Section 4.3). The model challenges the way products are designed for different cultures and supports the use of local content in solving design problems.
References


Delaney, M., McFarland, J., Yoon, G. H. and Hardy, T. (2002). Global Localisation, 
Innovation – Global Design and Cultural Identity, Summer, 46-49.
DeLarge, C. A. (2004). Storytelling as a Critical Success Factor in Design Processes and 
Denzin, N. K. and Lincoln, Y. S. (Eds.), (1998). Collecting and Interpreting Qualitative 
Publications.
or Encouragement to Innovation? In Proceedings of the Design Cultures – an 
International Conference of Design Research, Sheffield Hallam University, 
March 30-April 1, 1999.
Herefordshire: Prentice Hall.
Dorst, K. (Eds.), Analysing Design Activity, Chichester: John Wiley and Sons


United Nations Educational, Scientific and Cultural Organisation, National Report of the
Development of Education – Botswana (2001). Forty-sixth Session of the


11 (3), 74-79.


Environments.

Citizenship in Botswana. Journal of Southern African Studies, Vol. 28 (4) 671-
684.


http://www.idemployee.id.tue.nl/g.w.rauterberg/conference/CD_doNotOpen/A
DC/program.html

Zec, P. (2002). Lifestyle and Product Culture for a Global Age: Good Design in
Appendix 1

SAMPLE FOLKTALE SCRIPT
How the Desert Came Into the World

Long ago, Musa and his friend Modiri were the best farmers in the world. Their farms were so large that there was everything in it. People came from far and near to buy foodstuffs from them. And they became very rich.

One day the rains stopped falling, and for one whole year there was no rain. Musa and Modiri didn't know what to do. All the streams and rivers had dried up, and people stopped buying from them because there was nothing on their farms.

Modiri decided to go to Modimo, the creator of the universe, to solicit his help. So one morning, he called on Modimo and said to him, “Modimo, there has not been rains for many days. All the streams and rivers have dried up. All the crops on my farm have dried up and wilted. Please, let me get some rains.”

God was moved and said to him, “I have delegated some of my work to people, because I get so tired of small requests from people. I have given the task of wind to Phefo, the task of sunshine to Letsatsi and the task of rain to Pula. If you want rain, go and see Pula and ask him to give you some rain.”

Modiri was very happy and thanked God. He set off to look for Pula.

He came across him sitting under a tree taking a rest from the heavy task God had given him. He greeted him politely and told him that God had told him to come and look for him to give him some rain. “If it is God who sent you, I cannot refuse to give you any rain. Take a small stick and beat my back” he said.

Modiri picked two small sticks and gently hit Pula’s back two times, thanked him and went home. In the morning, he went to his farm and sure enough, there had been a heavy shower. And all the plants were standing upright and green.

Musa passed by Modiri’s farm the next morning. He was so happy; he almost jumped and touched the sky. He punched the air and yelled “Yippee!” He thought the rain had fallen on his farm, too. But alas when he got to his farm, he realised with shock that the rains
had stopped at the boundary. There had not been any on his farm. But why had rains fallen on Modiri’s farm? Surely, there must be an answer to this. He became suspicious of his friend and decided to go and ask him how on earth he got rains on his farm.

Modiri did not want to tell Musa about God’s rainmaker because of Musa’s sly nature. But later he decided to do so, so he told Musa about God’s rainmaker.

As soon as Musa heard this, he also decided to go and look for the rainmaker. He combed the forest for many hours and at long last came upon him sitting under a tree taking a rest from the heavy task God had given him. As soon as Musa saw him, he picked up a big club and hit the Pula’s back with all his might. Pula cried in pain. But Musa continued hitting him at the back with all his might with the heavy club. Pula fell down panting, but still Musa continued hitting him with brute force. After continuous beating, Pula lay still, not moving. Musa called out to Pula, but there was no response. Musa had killed the rainmaker. He had killed God’s rainmaker. He became frightened. “Oh dear, what have I done? I have killed God’s rainmaker.” He wanted to run, but realised that when he runs away he will put himself in a jam. Because his friend Modiri will know he had killed the rainmaker.

So sly was Musa that, it wasn’t long before he came out with a solution on what to do. He picked up the dead body and went to hide it in the middle of a morula tree.

He then went to call on Modiri and told him that he had seen a morula tree which was full of ripe fruits. He told Modiri that they should go and pluck the fruits. Modiri liked morula fruits very much but he was reluctant to go, because he didn't trust Musa. But he later changed his mind and went with Musa. When they got to the morula tree, Musa told Modiri to climb up the morula tree and shake it. So Modiri climbed the tree and when he got to the top and started shaking it vigorously. Suddenly there was a big crash. The body of God's rainmaker had fallen from the tree top when Modiri shook the tree. Musa started shouting and wailing. “Modiri, see what you have done. You have killed God’s rainmaker. He must have been hiding in the tree taking a rest from the heavy task that
God had given him. See what you have done now, you have killed him. What will God say now?” Modiri became confused; he didn't know what to do.

He got down from the tree quietly, but then as he was getting down his mind worked like lightning. He pretended to be shocked and said he was going to see God about it. He went away after saying this. Musa was very happy and jumped and clapped his hands. “Fool, I have put you into trouble. God will really punish you.” Unknown to Musa, his friend Modiri had also gone to make a plan to teach Musa that he wasn't a fool after all.

So very soon Modiri came with the people and told Musa that there was no problem at all. God was happy that the rainmaker was dead. He had been lazy at times and refused to work. “I am going to reward you for killing him” God said. And Modiri started singing and dancing happily. He said again that he had come with God's messengers to carry the dead body to God. Musa at once became furious when he heard this. He said angrily “Look, Modiri, don't try to be too clever. I killed him! I was afraid God was going to punish me this is why I hid the body in the tree. I am going to claim the reward.” So he carried the body on his shoulders and quickly went to God's Palace to tell him that he had killed Pula and that he should be rewarded.

God was so furious, he punished Musa severely. After the punishment, no rain ever fell on Musa’s farm, and up till today if you look at the desert there is no rain. Musa’s farm is where the desert is now.
Appendix 2

SAMPLE CODED SCRIPT FROM A FRAMEWORK OF A LONG TERM VISION FOR BOTSWA 2016
SAMPLE SCRIPT FROM A FRAMEWORK OF A LONG TERM VISION FOR BOTSWANA 2016

The first element of the framework for the vision is that Botswana should, in twenty years time, be a prosperous, productive and innovative society. It should have a diversified economy with an average income level per person of three times the current level, the equivalent of US$8,500. There should be full employment, so that the job opportunities are in balance with the number of people seeking work.

In the year 2016, Botswana should be a just and caring society. There should be an equitable distribution of income, and there should be no people living in poverty. A strong social safety net should support those who are disadvantaged. Every citizen should have access to good quality housing, and to good quality health services with a reasonable distance. All people should grow up in a strong stable family unit that provides support and retains the social values that distinguish Botswana from other nations. The vision for the future must include a means for ensuring that the strength of the family is not eroded as a result of the rapid social changes that are sweeping the country, the region, and the world.

Botswana in 2016 should be an educated, informed society. All citizens should have the choice of continued education, whether in academic fields or in vocational and technical subjects. Botswana must also join the information age, with full access to the media of communication and the explosion of information flow that is revolutionising the world.

In twenty years time, Botswana must be open, democratic and accountable society. The traditions of community oriented and decentralised democracy should be on sound foundation. All citizens and those in positions of leadership will hold themselves accountable for their actions, and to those they represent. The role of traditional leaders should remain strong.

Botswana in twenty years time should be a moral, ethical and tolerant society. The standards of personal morality of all citizens and leaders will be of the highest quality. No citizen should be disadvantaged as a result of gender, age, religion, ethnic origin or political opinions.

All Botswana will need to see the advancement of their country as a duty incumbent on everybody. Self-reliance will be a vital attribute in the future. Botswana has a long history and a developed culture that determines the behaviour and attitudes of its people. This culture must be strong enough to absorb change without losing its central values. Family traditions, and the strength of the family unit must be maintained, and the cultural and spiritual values
DESIGN PROJECT OUTLINE

Introduction
This project aims at exposing students to consider culture in their everyday design practice. Botswana’s first President (Sir Seretse Khama) once said, ‘a nation without a past is a lost nation and a people without a past is a people without a soul.’ Designers have a key role to play in contributing to the fulfilment of the above sentiment. Student designers should be aiming at designing products that do not only provide benefits to users but narratives as well. The purpose of this project is to link socio-cultural factors to contemporary design and technology in order to respond to Botswana’s current and future needs.

Design Brief Statement
Design and make a model artefact that would reflect and acknowledge Botswana’s unique social context and culture. The artefact should seek to convey ideas, messages, symbols, and information, moral or aesthetic values of Botswana.

Design Constraints
You are asked to consider using some of the following socio-cultural factors: They are meant to provide guidance and you are not limited to them as you are welcome to include your own.

Material factors: Baskets, cattle, traditional hut, water, ornaments, beautiful carvings and decorative works (made from wood and stone);

Social practice factors: Community spirit, sharing, assistance, trust, unity, friendship, friendliness, kindness, thanking, pride and love, consultation, respect of authority, custom, sitting around the fire, sitting under a tree shade, marriage, exchange of presents, measurement of time, economy, social gathering, democracy and ‘botho’

Emotional factors: Pleasure, fun, love, enjoy, satisfaction, excitement, amusement, happiness, joy, amusement, interesting, traditional aesthetics, entertaining, singing, dancing

Technology/Design factors: Science and technology
The challenge would be to transform socio-cultural factors into product features.

**Requirements for Submission**
You are required to submit a design portfolio and design model or any relevant paper work you have undertaken for this project. You need to explain which socio-cultural factors you have considered and how they contributed to your design in order to acknowledge Botswana’s cultural and social context.

**Evaluation**
The proposed artefact will be judged on the extent you have transformed socio-cultural factors into product features that would truly reflect Botswana’s diverse culture.
INTERVIEW PROTOCOL
The Impact of Socio-cultural Factors upon Human-centred Design in Botswana

This study is about how socio-cultural factors impact upon human-centred design in Botswana. I am interested in how socio-cultural factors can be transferred and applied into product features. The ultimate purpose of this study is to develop strategies and methodological approaches to improve the potential of integrating cultural factors in the human-centred design process as the key to innovative and sustainable product development. The developed methodology is expected to assist designers to design cultural-orientated, environmentally sound, cherishable and user-friendly products. To achieve this task, I am collecting data from the sketch books, design models, design reports, photographs and interviews with designers like you!

In order to ensure that you are not vulnerable to someone determining what you said, I will keep the information in confidence. I will give you hard copies of the transcript of your interview script to double check what you said. I hope you can spare some time in assisting me in this endeavour.
Date: April 19, 2005  Place: Room 4

Questions

Selection of Product Idea
1. What made you choose the product which you have made?

2. Did you select this product because of the socio-cultural factors you want to incorporate or selected the product and then determined which socio-cultural factors you want to incorporate?

3. Would you have chosen the same product if socio-cultural factors were not introduced?

Selection of Socio-cultural Factors
4. Which socio-cultural factors have you transferred and applied into a product feature(s)?

5. Why have you chosen those factors?

6. Do those factors reflect the national or ethnic culture? If ethnic, which one?

7. Do those factors reflect any rural or urban life patterns?

Integration of Socio-cultural Factors
8. How did you transfer those factors into product features?

9. Is it possible to transfer and apply socio-cultural factors that you used in a different way? If yes, please explain your answer.
10. Are there any factors applicable to design which reflect gender roles in the society? Elaborate your answer. Identify them. Have you used any in your design model and which ones?

11. According to your experience, do socio-cultural factors have any influence in product design? Elaborate on your answer.

12. Do you think that all designs for Botswana should have socio-cultural features built into them?

**Generation of Novel Design Ideas**

13. Can socio-cultural factors be used to generate novel design ideas? Explain how?

14. Which design features would you consider novel in your product/design model?

15. Which socio-cultural factors sparked this novelty?

**Product Acceptance**


17. Do socio-cultural factors add any value when incorporated into the design of products? Explain your answer.

18. Which features in your product do you think can facilitate users to accept your product?

**Miscellaneous**

19. Reflect on your experiences of undertaking this project? Any difficulties and successes?
20. If you were given another chance to undertake the same design project, what would you do differently and why?

21. Do you have any questions or contributions to make that were not covered during this interview?

Thank you for your cooperation and participation in this interview. Be assured that the information you provided will remain confidential. I may contact you in future for a follow-up interview.

Richie Moalosi
Appendix 5

SAMPLE CODED REPORT
Report 3: ‘Kgotla’ chair

Introduction
This project was aimed at designing a seating device that reflects the socio-cultural factors of Botswana. Such factors were to be interpreted and incorporated into the design of the product through various means such as materials selected, shape and form, colour etc. The seating device theme was chosen after realising that traditional seating devices in the market have lost their true functional purpose and have been narrowed down to mere ornamental artefacts. This is largely due to their crude forms and lack of ergonomics in the designs. From this project, the expectation is to come up with a design solution that could restore cultural seating devices. Furthermore, the product should be in a position to be marketed abroad to reflect Botswana’s identity. Hopefully, this has been achieved, if not entirely, then to a certain extent.

Design development
The project outcome is basically a chair. Certain features and resemblances of the chair were derived directly from existing traditional seating devices. The design has moved away from the traditional manufacturing of carving and individualised one-offs to modern fabrication methods such as mass production and design for disassembly.

Towards a concept
The initial concepts were derived from existing traditional devices. Most of their features such as shape and form were merely a slight change of what already exists such as concept number three was inspired by a traditional ‘kgotla’ chair and concept number two was inspired by a musical drum. In addition to the cultural influence, ergonomic features were also thought out in the initial concepts e.g. attention to the back support, seat form and cushioning.

The design solution
From the initial concepts that were drawn up, certain features from different concepts were felt to be enticing and were selected for developing the idea further. Concept number three frame shape was borrowed for use in the development since it greatly symbolises the ‘kgotla’ chair. Concept number five’s back support was thought to be a nice way of developing the seating and back support by having it broken in pieces rather than just continuous. The lion picture on the cloth cover came in the development whilst reviewing some of the pictures taken from Botswana craft. The comparison between the ‘king of the jungle’ and ‘chief of the people’ came into light. Traditionally, lion skins were worn by chiefs (similarly leopard skins). Since the shape of the chair was from the traditional ‘kgotla’ chair (normally used by chiefs, even today), it only seemed fitting to put the two together.
Appendix 6

SAMPLE CODED IMAGES
Walking stick

Thumb piano

Personal digital assistant
Bottle opener

Traditional ‘kgotla’ chair
Rose side lamp

Hut-shaped clock
Appendix 7

TABLES WITH CODED SEGMENTS
Table A Cultural fitness statements derived from technology/design factors (TDF)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>They should consider the cultural fit of the product in the society.</td>
<td>TDF</td>
</tr>
<tr>
<td>12</td>
<td>Designers often emphasise functionality at the expense of the relationship between people and the products.</td>
<td>TDF</td>
</tr>
<tr>
<td>19</td>
<td>It is important that designers should start to consider non-physical attributes of products instead of functional and physical constraints. I also think that for the product to be successful it should not be composed of technical aspects only but it should infuse cultural factors as well.</td>
<td>TDF</td>
</tr>
<tr>
<td>23</td>
<td>In this way, designers will begin to understand the values, beliefs and norms of their users together with the relationship users have with products.</td>
<td>TDF</td>
</tr>
</tbody>
</table>

Table B Use of shape and form in generating novel design concepts (NDC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The overall shape and form is novel.</td>
<td>NDC</td>
</tr>
<tr>
<td>4</td>
<td>The shape of a hut together with the fact that it incorporates a clock...</td>
<td>NDC</td>
</tr>
<tr>
<td>14</td>
<td>...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 The shape resembles a canoe or shield found in the Okavango region.</td>
<td>NDC</td>
</tr>
<tr>
<td>16</td>
<td>...something quite different for a change than something which is inspired by the Western culture.</td>
<td>NDC</td>
</tr>
<tr>
<td>18</td>
<td>I believe the shape, size, colours and even materials are novel.</td>
<td>NDC</td>
</tr>
<tr>
<td>20</td>
<td>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.</td>
<td>NDC</td>
</tr>
</tbody>
</table>

Table C Aesthetics factors (AST) facilitating product acceptance (PAC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Socio-cultural factors increase the aesthetics of the product.</td>
<td>PAC</td>
</tr>
<tr>
<td>15</td>
<td>These factors are identified with African aesthetics and facilitate product acceptance.</td>
<td>PAC</td>
</tr>
<tr>
<td>16</td>
<td>Yes, in Botswana they add value in aesthetics e.g. patterns in baskets, wood carvings.</td>
<td>PAC</td>
</tr>
</tbody>
</table>

Table D Traditional features that facilitate product acceptance (PAC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>The use of indigenous materials will facilitate product acceptance.</td>
<td>PAC</td>
</tr>
<tr>
<td>3</td>
<td>The solution was achieved through combining some features in the existing traditional chairs and some from modern seating devices. The blending of these features promote product acceptance.</td>
<td>PAC</td>
</tr>
<tr>
<td>4</td>
<td>It has features of acceptance since it combines traditional and modern features.</td>
<td>PAC</td>
</tr>
<tr>
<td>15</td>
<td>These features connect people with nature.</td>
<td>PAC</td>
</tr>
</tbody>
</table>
### Table E Aesthetics (AST) and novel concepts (NDC) statements

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>...a traditional chair has a good mechanism for folding and unfolding for easy carrying and packaging.</td>
<td>NDC</td>
</tr>
<tr>
<td>17</td>
<td>...act as a stepping stone to new design ideas.</td>
<td>NDC</td>
</tr>
<tr>
<td>19</td>
<td>They compel users’ to look and touch and this evoke cultural association.</td>
<td>AST</td>
</tr>
<tr>
<td></td>
<td>...defines true African beauty.</td>
<td></td>
</tr>
</tbody>
</table>

### Table F Socio-cultural factors facilitating novel design concepts (NDC)

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Definitely, they can be used to generate new ideas because cultural factors are unique for each society and this can inspire new ways of thinking.</td>
<td>NDC</td>
</tr>
<tr>
<td>4</td>
<td>They can, because the ideas you have seen around are similar in a way. If you use cultural factors that have not been applied to products, this would result in unique products.</td>
<td>NDC</td>
</tr>
<tr>
<td>6</td>
<td>This can be used as a form of inspiration to new design ideas which are related to our culture.</td>
<td>NDC</td>
</tr>
<tr>
<td>19</td>
<td>These cultural factors can pave way to the diversification of design ideas that will ultimately lead to product innovation and users satisfaction.</td>
<td>NDC</td>
</tr>
<tr>
<td>20</td>
<td>They can eventually give birth to new designs.</td>
<td>NDC</td>
</tr>
</tbody>
</table>

### Table G Statements related to meaning in products

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>The product narrates a story behind its design to users.</td>
<td>PAC</td>
</tr>
<tr>
<td>14</td>
<td>Cultural products carry meaning and stories.</td>
<td>PAC</td>
</tr>
<tr>
<td>16</td>
<td>I just wanted to give a cow horn a different meaning so that it can be used for different products.</td>
<td>PAC</td>
</tr>
<tr>
<td>19</td>
<td>The products they design will provide meaning to their users.</td>
<td>PAC</td>
</tr>
</tbody>
</table>

### Table H Mediation (MDT) statements supporting localisation of products

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>The product would be in line with users’ norms and values.</td>
<td>MDT</td>
</tr>
<tr>
<td>5</td>
<td>People tend to accept what they feel represents their way of life.</td>
<td>MDT</td>
</tr>
<tr>
<td>14</td>
<td>The products designed should satisfy the lifestyle of people.</td>
<td>MDT</td>
</tr>
<tr>
<td>19</td>
<td>Products make one connect with history or his/her roots.</td>
<td>PAC</td>
</tr>
<tr>
<td></td>
<td>...in that way, our culture will never be lost.</td>
<td></td>
</tr>
</tbody>
</table>
Table I Mediation (MDT) statements related to product’s spiritual bonding

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Yes, products will be more familiar to the society and they can form a strong bond with them.</td>
<td>MDT</td>
</tr>
<tr>
<td>14</td>
<td>Local people would have a spiritual connection with the product.</td>
<td>MDT</td>
</tr>
<tr>
<td>19</td>
<td>Cultural products create a strong bond with users. There is that sense of unexplained spiritual connectedness with the product. If cultural factors are not incorporated, products will offer weaker interaction attributes with users.</td>
<td>MDT</td>
</tr>
<tr>
<td>23</td>
<td>Products are given an emotional attachment to them and their interaction with the users is enhanced.</td>
<td>MDT</td>
</tr>
</tbody>
</table>

Table J Gender (GND) appeal statements

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The ‘matlhoa’ I have used are unisex.</td>
<td>GND</td>
</tr>
<tr>
<td>9</td>
<td>The product is mainly targeted for the female population who live in rural areas.</td>
<td>GND</td>
</tr>
<tr>
<td>12</td>
<td>My stool was designed for men.</td>
<td>GND</td>
</tr>
</tbody>
</table>

Table K Statements supporting broader thinking scope

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>This project has opened up a new way of designing as there are more cultural factors out there than one can imagine.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>It enables one to think broadly and to be sensitive to the local circumstances.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>It can make you think broadly and it can also make you discover things you never thought of…</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>The introduction of socio-cultural factors to design has opened up my scope to be a better designer and to be sensitive to the local context when designing products.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>This idea was inspired by socio-cultural factors and if we were not introduced to them, I do not think I will have designed this artefact.</td>
<td></td>
</tr>
</tbody>
</table>

Table L Statements on lack of the culture-orientated design approach

<table>
<thead>
<tr>
<th>Participant</th>
<th>Statement</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>...most of the local designers were not educated to consciously incorporate socio-cultural factors when designing products.</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>At the moment they do not because most of the local designers are not aware of this approach to design.</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Socio-cultural factors seem to be less explored when it comes to designing products.</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Yes, the problem is that there is inadequate research on the incorporation of cultural factors in product design.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 8

SAMPLE CODED INTERVIEW SCRIPT
Interview 3

Date: April 19, 2005
Place: CCTV Room, University of Botswana
Time: Morning Session, 0800 - 1000 hours
Product: Kgotsa chair

Selection of Product Ideas
Interviewer: What made you choose the product which you have made?
Interviewee: The reason why I chose this product is that when I was looking at some existing chairs and other seating devices I realized that most of them have been reduced from their original functional purpose to just ornamental artefacts. For example, if you buy a traditional chair, most people will not sit on it because they are uncomfortable to seat on. On the other hand, I was motivated by the loss of identity of Botswana's traditional seating devices which need to be preserved.

Interviewer: Would you have chosen the same product if socio-cultural factors were not introduced?
Interviewee: Honestly no.

Selection of Socio-cultural Factors
Interviewer: Which socio-cultural factors have you transferred and applied into a product features?
Interviewee: Chiefly, Kgotsa chair, lion figure, triangular motifs.

Interviewer: Why have you chosen those factors?
Interviewee: Chiefly is more relevant because it deals with leadership and the product is mostly used at Kgotsa meetings where the chief exercise his mandate. The chair is also used at other social gatherings. Young people do not normally sit on these chairs but rather on benches. This reflects the respect they show to the elderly.

Integration of Socio-cultural Factors
Interviewer: How did you transfer those factors into product features?
Interviewee: I have changed the shape and form of the Kgotsa chair. I have also engraved traditional motifs into the chair. The cloth hanging over the chair is of a lion figure which represents the king of the jungle. Traditionally, chiefs were known to wear lion items to show status or authority they possessed. In some instances, they were