A COMPARATIVE CASE STUDY OF THE MAROPENG VISITOR CENTRE AND THE ORIGINS CENTRE FROM THE PERSPECTIVE OF NEW MEDIA INTERACTIVITY

by

INGRID HENDRIKA LEUJES

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SUPERVISORS: Prof Jeanne van Eden
Mrs Jenni Lauwrens

SUMMARY

Title: A comparative case study of the Maropeng Visitor Centre and the Origins Centre from the perspective of new media interactivity

Name: Ingrid Hendrika Leujes

Supervisors: Prof Jeanne van Eeden
Mrs Jenni Lauwrens

Department of Visual Arts

Degree: Magister Artium (Visual Studies)

Postmodern museums challenge many of the more traditional concepts regarding what constitutes a museum. Concepts such as museums being places of contemplation or places that exhibit collected artefacts are no longer considered to be the primary attributes of museums. The idea of the museum as a collection of knowledge is beginning to take ground even though more traditional ideas are not necessarily rejected. As the focus has shifted towards the experience of the visitor in terms of education and entertainment, the display of artefacts supported by text is no longer considered to be essential to providing a meaningful experience for the visitor. Photography and film are now widely used to communicate information or ideas in museums. Less widely used, particularly in South Africa, are new media such as computer games and virtual reality. New media, because of its ability to engage people through its interactive nature provides a valuable communication tool for the museum environment. A comparison between two South African sites, The Maropeng Visitor Centre and The Origins Centre, reveals the value of new media for museums and the value of museums for education in the society at large.

KEY TERMS: Museum; Learning; Interactivity; New media; The Maropeng Visitor Centre; The Origins Centre.

UNIVERSITY OF PRETORIA
FACULTY OF HUMANITIES
DEPARTMENTOF VISUAL ARTS

I, Ingrid Hendrika Leujes

Student number 28314582

Declaration

I declare that this dissertation is my own, original work. Where someone else's work was used (whether from a printed source, the Internet or any other source) due acknowledgement was given and reference was made according to departmental requirements.

Signature _____ Date _____

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CHAPTER ONE
INTRODUCTION

1.1 Background and aim of study

A great deal of discussion concerning new media,[1] which is generally considered to be digital, centres around the impact of new media on audience interaction with media and content. The view, held by many new media theorists, is that new media has changed the way people make meaning out of their interactions with media (Bolter & Gromala 2003; Hansen 2004; Manovich 2001). This concern with meaning making[2] (and the possibilities for cognitive and emotional learning) is central to the museum environment as well. This study therefore aims to reconsider the role of audience interactivity and engagement in the light of the theoretical discourse regarding the relationship between new media and making meaning and to consider this discourse as it might apply to the museum context. The Maropeng Visitor Centre located in the Cradle of Humankind in North West Gauteng (2005) and The Origins Centre[3] located in Johannesburg (2006) are used as case studies to develop further concepts extrapolated from theoretical discourse. As can be seen in the literature review (see 1.2), new media interactivity is a complex subject, which requires some in depth discussion. Furthermore, the concept of what constitutes a museum also requires thorough discussion, especially as recent trends put more emphasis on the creation of a meaningful experience for the visitor, which lead to educational insights, rather than on the display of collected artifacts. Since Maropeng and Origins are in some ways typical and in other ways atypical museums, this exploration serves to put the case studies in context. Determining the validity of regarding Maropeng and Origins

[1] Media such as computer games, DVDs, Internet and virtual reality are examples of new media. According to Chun (2006:1-3), new media is a plural noun but is used in the singular.
[2] Meaning making, however, from the point of view of new media practitioners and philosophers, is centered on the physical experience of the body and the senses, while museums are more likely to prefer representational and symbolic modes of communication.
[3] With the exception of chapter headings and figure captions, The Maropeng Visitor Centre and The Origins Centre are henceforth respectively referred to as Maropeng and Origins, the names by which they are commonly known.

as museums is necessary because they are the contexts within which interactivity and the making of meaning in the museum have been studied.

By means of qualitative and theoretical research, this study explores whether new media interactivity can enhance visitor experience in terms of meaning making in the museum environment as it has proven to do in the classroom (see the Games to Teach project on page 62). Making meaning is held to be experienced on a cognitive, affective[4] and physical level, although physical learning is, in the museum environment, considered to be less important in its own right but important in its support of cognitive and affective learning.

Maropeng and Origins were chosen for comparison because they both have a similar content or focus: they both conform to "museums as free-choice learning settings" (Falk & Dierking 2000:177), they both date from the same decade, and they both use interactive techniques as communication tools in the museum environment. Their use of interactivity differs, however, in terms of scale and innovation: Maropeng uses mechanical rather than digital interactivity and Origins uses new media for its interactive exhibits. This dissimilarity amongst many other similarities makes it easier to explore the role of new media in interactive museum exhibits.

Drawing on existing discourse related to new media interactivity and engagement, and appraising the existing new media discourse from the perspective of museum exhibit design, provides opportunities for cross pollination which can expand and refine both discourses. Furthermore, by examining the two chosen museums, an opportunity is provided for expanding what is primarily a global discourse to accommodate a South African context. As is evident from the bussing in of school children, museums have become a

4 In psychological circles the term *emotion* is often expressed as *affect*. Brian Massumi (2002) and Mark Hansen (2004), both of whom discuss new media from a more philosophical point of view, have more complex understandings of *affect*. Massumi (2002:24-28) describes *affect* as the intensity of an emotional state. Furthermore, he states that *affect* has an "irreducibly bodily and autonomic nature" (Massumi 2002:28). Hansen (2004:7) also sees *affect* as linked to the body when he states that *affectivity* is "the capacity of the body to experience itself as 'more than itself' and thus to deploy its sensorimotor power to create the unpredictable, the experimental, the new".

valuable education resource in South Africa in that they provide information not available to children (and adults) in other educational facilities. Schools, for example, do not have large collections of fossils as does Origins. Furthermore, many schools in South Africa are still underprivileged in terms of educational resources.

1.2 Literature review

In this section the seminal sources for each of the topics addressed in this study is briefly introduced. For example, Lev Manovich is well known to students of new media. His work has evoked responses from many subsequent authors thus providing a good starting point for discussion around new media. Likewise, Kenneth Hudson, while not defining the quintessential museum, nevertheless provides a starting point for developing an understanding of qualities inherent in museums.

1.2.1 The changing role of the museum

Hudson (2004:87) argues that the phenomenon called a museum is an imaginary concept in that no attributes of it are common to all museums. Despite this statement, Hudson (2004:88), at another point in his discussion, extracts as the essential quality of museums the fact that they are places "in which objects – 'real things' – are used as the primary means of communication". This is the more traditionally held view of what constitutes museums. However, Suzanne Keen's (2004:1) view that museums will increasingly become collections of knowledge rather than collections of objects, contests Hudson's point of view and is more relevant for postmodern museums. The idea expressed by Angelina Russo and Jerry Watkins (2006) of the 'post-museum', which uses virtual technologies and concentrates on audience participation, supports Keen's view, as well as the view expressed in this study. Susan Bean (1994) likewise describes what she considers to be the "democratisation of museums" as a shift in focus towards wider audience participation than merely looking.

Some authors (e.g., Bean 1994; Falk & Dierking 2000), while not specifically discussing democratisation, have a stance that indicates their sympathy towards visitors' learning and enjoyment. These two sources are relevant to this study as their view that museum visitors should both learn and enjoy supports one of the underlying tenets expressed here. Other authors (e.g., Roberts 1997:69; Sorenson 1989:60) seem to be less sympathetic when they appear to accuse postmodern museums of being superficial and providing so-called 'infotainment' rather than genuine education. On the other hand, they may simply be observing a museum tendency without decrying it. This tension between education and entertainment is discussed in Chapter Two and again in Chapter Four as part of a comparison between theme parks and museums.

Both Maropeng and Origins use interactivity as "edutainment", although as already mentioned, in different ways. If Jean-François Lyotard's view that "knowledge has become a commodity, bought and sold on the market" (Crome & Williams 2006:10) is accepted as valid, then private and public partnerships, selling 'edutainment' would be examples that support this statement. Both Maropeng and Origins have private and public partnerships. This indicates that at least part of the intentions of both museums is to treat knowledge as a commodity.

Education is undoubtedly one of the most important functions of a museum. John Falk and Lynn Dierking (2000), George Hein (2000) and Eileen Hooper-Greenhill (2004) are amongst the theorists who discuss learning in the museum environment. They reject the idea of knowledge being transmitted to the passive individual and agree that meaning making, or learning, is actively undertaken by visitors. In summary, they contend that people construct their own meaning in relation to the environment and their own interests and prior knowledge. This understanding of learning supports the theory that is investigated in this study, namely that interactivity is important for meaning making in a museum environment and that this interactivity should be embodied and energise affective responses, rather than being entirely cerebral.

On the other hand, Alison Griffiths (2006:1-2) argues that, while many curators and museum directors appreciate interactive technologies as a means towards democratisation of knowledge, there still exists the tension between “moral and social uplift” and the “sensationalist dime museum”. The traditional and changing roles and characteristics of the museum form one of the points of departure of this study, and the differences and similarities between theme parks (which can be regarded as sensationalist) and museums, as mentioned previously, are addressed in Chapters Two and Four.

1.2.2 New media in the museum environment

Manovich (2001:25) describes new media as being essentially digitised media in that images, text and sound are reduced to numerical data. This point of view is supported by Jay Bolter and Diane Gromala (2003:19), who see the capabilities of the Apple Macintosh as central to the development of the idea of the computer being a medium. These authors provide the basis for an understanding as to the nature of new media. Thus they provide the foundation for regarding new media as electronic and as a medium, which this study deems valid.

New media is also considered to be an interactive medium that people engage with physically. Manovich (2001:55-57) fears that too much emphasis on the physicality of interaction with new media obscures what he terms the “psychological processes of hypothesis formation and identification”. Bill Nichols (2003:625-641) and Mark Hansen (2004:1-18) argue, however, for the physicality of new media interaction as enhancing the experience of interactivity. Hansen (2004:101) specifically mentions proprioception and tactility as being crucial to new media perception and this provides a premise for the viewpoint that new media interactivity is valuable in the museum environment.

Sherry Turkle (2005:50-73) likewise notes the physical interactivity that is part of computer games, but distinguishes between users who discover the hidden rules of the game through direct playing experience, and those who really wish to interact with the computer by individualising both hardware and software through 'tinkering' and 'programming'. Discovering the rules behind the game is what gives the game holding power, according to Turkle. Yellowlees Douglas and Andrew Hargadon (2004:192-205) place emphasis on emotional pleasures that keep people engaged and facilitate the holding power of the game. They attribute this emotional pleasure to the fact that players, in playing the game, can choose to interpret and develop various scripts from their own point of view. In short, the above theorists all agree that new media interactivity is valuable for engagement and perception, which in turn, enhances the experience of meaning making.

Torben Grodal's (2003:129) view is that it is new media's ability to relate perceptions, cognitions and emotions to first person actions that make new media so immersive, which keeps people engaged. This return to the body as a source of unmediated experience is interesting to note as postmodern discourse puts emphasis on analysing the ways in which experience and the making of meaning is culturally mediated. Evidently some new media theorists are putting more emphasis on physical interactivity and emotional pleasure as biological sources of cognitive and affective experience, and therefore also as playing a role in the making of meaning.

In the museum space, physical interactivity, as opposed to physically walking through the museum and engaging with exhibits, has not been part of the debate until fairly recently. The emphasis in museum studies thus far has primarily been on interpretive strategies (e.g., which strategies enable effective communication between the museum and the visitor). The museum experience is therefore seen as a mediated experience where communication happens between the museum and the visitor. The aim of the museum, in terms of its visitors, must ultimately be that they can make meaning out of the experiences offered by the museum. Making meaning in a museum environment is part of a complex communication process involving, amongst

others, the curator/director (the author), the exhibit (the medium) and the audience (the reader). The relationship between communication, interactivity and medium is explored in depth by Katharine Hayles (2002) in her work *Writing machines*. Both Hayles (2002:26), through her description of "multiple pathways", and Mark Meadows (2003:65), through his description of "modulated plot structures" serve to illustrate how interactivity has caused a shift away from the linear structuring of narrative or information towards a more open ended or 'rhyzomatic' (Deleuze 2005:3-25) structure.

Marshall McLuhan (1967:8) is one of the earlier theorists to note that new media, "electric technology" in his words, "is reshaping and restructuring patterns of social interdependence and every aspect of our personal life". According to McLuhan (1967:41), a change in media causes a change in "the ratios of sense perceptions", which in turn changes the way people make meaning. Extrapolating this idea further, it could be said that McLuhan also believes that experience is mediated. However, he points out that it is the media itself that mediates and not the content communicated by the media, hence the adage "the medium is the message" (McLuhan and Fore 1967). Although McLuhan is not discussed further in this study, it is important to note the concept of the medium communicating in its own right for this has implications for the communication value of new media.

Hooper-Greenhill (2004:556-575) discusses communication in the museum environment, balancing the intention of the curator with the engagement, experience and cultural viewpoint of the reader. This view is also held by many semioticians. For example, Gill Branston and Roy Stafford (2003:10), in their discussion on semiotics state:

> Language is both *constructed* and *inherited* by people using it within existing cultures, to produce meanings. Things and events in themselves do not have inherent meaning. Of course they exist. But neither they, nor the way we describe or photograph or even perceive them, are ever experienced raw or unmediated.

While Grodal (2003:129-131) would agree that the viewer/audience is an active participant in the communication process, he maintains that semiotics

places too much emphasis on social and media constructions. He states that "stories are based on innate mental functions that match the ecological niche of humans, they are not just social constructions or media constructions" (Grodal 2003:130). Obviously communication in the museum context is different in intention and content from video games, but because Grodal (2003:130, emphasis added) explores video games in relation to "*unmediated real life experiences* and those mental structures that support such experiences", his observations about interactivity and communication processes can be generalised onto other forms of communication. Oliver Grau (2003), on the other hand, through tracing new media back to the use of perspective in pictorial arts, develops the viewpoint that the mediated environment is more immersive, and therefore more potent, than the unmediated perception of the world. It would appear from the above literature that there are conflicting viewpoints regarding the experience and the process of making meaning. However, according to Margot Lovejoy (2008:65), postmodernists accept the "chaos, instability, and many layered complexity of commercial mass culture," a viewpoint that allows for many interpretations of the same phenomena.

Understanding the role of new media in the museum requires an understanding of the exhibits and their organisation as a context within which new media is, or is not used. Martin Lister and Liz Wells (2001:64) state, "we understand images [and by extension museum exhibits] as representations, the outcomes of the process of attaching ideas to and giving meaning to our experience of the world". Michael Emmison and Philip Smith (2000:173) put more emphasis on movement through the museum, referring to "the idea of the gazing individual navigating through public spaces." Gillian Rose (2010:179-192) focuses on how the apparatus and technologies of museums create the subject positions of visitors. All of these points of view provide the foundation for an analysis of the two museums under discussion, and also for the analysis of the role of new media within the museum.

1.3 Theoretical and methodological frameworks

This study puts forward the view that the media and materials used as an interface between content and audience have an effect on audience interactivity, engagement, and meaning making. The underlying premise which informs this study is that meaning making is “a set of negotiated processes” (Hooper-Greenhill 2004:565) rather than the “transmission’’ of information according to preset formulas, and therefore this study adopts a poststructuralist and postmodern stance.

The study explores the making of meaning within the museum context and more specifically within the context of Maropeng (2005) and Origins (2006). Cognitive psychology (more particularly schema theory which acknowledges a biological aspect to meaning making), semiotic theory (and more broadly visual methodologies) and discourse analysis provide useful frameworks for investigating interactive communication and meaning making, and these orientations are used in conjunction with poststructuralist and postmodern theory. These theories provide the backbone which give observations and opinions, derived from Maropeng an Origins site investigations, validity.

Meaning making and learning is accepted as being one and the same thing by constructivist learning theorists, as is the inter-relationship between interactivity and learning. Constructivist learning, as a theory, embraces other approaches such as contextualised learning and different learning styles. Cognitive and behavioural psychological approaches to learning are also used to understand the impact of interactivity on learning more fully.

Audience interactivity and engagement with texts (in the semiotic sense of the word) are reconsidered in the light of theoretical discourse around new media and the meaning making process. The conclusions drawn from the literature review are then applied to the analysis of Maropeng and Origins and the theories are tested. The study is essentially exploratory and descriptive and therefore qualitative in nature but deems to locate theories such as the psychological qualities of learning, visual analysis (including semiotics) cultural studies and theories as to the role of the museum under the broad

umbrella of new media.[5] Furthermore the emphasis that new media philosophers, such as Hansen, as described by Gillian Rose (2012:8), place on the affective experience rather than visual representation or symbolism also influences the observations made in this study. This marrying of separate theoretical stances becomes the framework for analysing Maropeng and Origins.

1.4 Overview of chapters

Since Maropeng and Origins are case studies in this research and they are taken to be museums, it is necessary to determine the qualities that constitute a museum. Accordingly, Chapter Two explores museums from different historical periods and points of view to discover their key characteristics. It does not attempt to provide a linear chronology that describes the development of museums, but rather to uncover different forms and roles of museums in society. One of these characteristics is that museums are places of contemplation; another is that museums are places that house collections of cultural artefacts, or natural or scientific objects. However, particularly in postmodern museums, the trend is developing to collect and display "knowledges" (Keen 2004:1) rather than objects. Many contemporary museums also focus more on the experience of the visitor rather than on the displaying of objects.

Chapter Two also illustrates that the gradual enlargement of the museum space is linked to museums becoming public and to the increasing democratisation or inclusiveness of museums. The rationale affecting methods of display has also changed over time in order to become more accessible to a wider range of visitors. The final part of the chapter deals with the museum's role in educating and entertaining the visitor. Part of this discussion includes an investigation into people's engagement with museum displays, as this is seen to be crucial to learning, entertainment and the museum experience as a whole.

[5] A quantitave analysis would be unsuitable for this study, as the enormous amount of data needed to make the conclusions valid would obscure the central point of the study.

Chapter Three discusses new media in the museum environment. It begins by providing various viewpoints as to what constitutes new media and why it is termed *new* media. In order to explore new media and its value for engagement, meaning making and entertainment in the museum environment, three types of new media are discussed. The first of these is the video game, the second is new media fine art and the third is virtual reality.

Video games are important to investigate because they are already used in some educational and museum environments, even though they are often considered to be superficial or trite. Walter Holland, Henry Jenkins and Kurt Squire (2003:44) state that this superficiality is the result of games having been developed without the inclusion of game designers and educators. They go on to state that good games respond to the player's actions so that all players, be they poor, mediocre or excellent, can be fully tested by the game.

Most new media fine art is characterised by the physical movement of the viewer in interacting with the artwork. This interaction is via an interface, which the viewer may or may not perceive. One of the characteristics of new media fine art is a heightened sense of reality created through immersion. The value of new media fine art is that it uses computer technology that allows the viewer to make meaning in an embodied way and to interrelate all the senses.[6]

Virtual reality has a similar immersive quality to new media fine art, except that viewers or participants believe themselves to be in the real world when they are not. Protagonists of virtual reality believe that it can provide a more profound experience than reality can. The artificial environment of virtual reality can also be a simulation of the real world as, for example, is the case

[6] Gail Rose (2012:8) quotes Laura Marks as saying "to appreciate the materiality of our media pulls us away from a symbolic understanding and towards a shared physical existence". This shared "physical experience" constitutes the immersive quality of new media which is a more powerful experience than interpreting representations and symbols. This is not to say that museums should use only new media, but that it could be a useful support to other more traditional modes of presentation

with simulated flights used to train pilots. It is this ability that makes virtual reality useful for the museum environment.

Chapter Four begins by ascertaining, according to the characteristics of museums revealed in Chapter Two, that Maropeng and Origins can indeed be classified as museums. Maropeng is firstly described and analysed generally and then in terms of new media; Origins is subsequently treated in the same manner. This provides the information necessary finally to assess the value and potential of new media in both museums and in the museum environment in general.

All the interactive displays at Maropeng are mechanical and lack the ability of new media displays to respond to the player's level of expertise and to immerse the viewer, nor do they involve the visitor affectively. Origins, on the other hand, does have new media displays, these being handheld guides, computer consoles spread throughout the museum and an interactive image of a rain animal projected onto the floor. These uses of new media have advantages in comparison to the mechanical interactivity at Maropeng. Furthermore, new media can be considered to be more stimulating than mechanical media simply in terms of its newness. Visitors have not yet had time to become bored with the media.

Threaded through the chapter are education and entertainment issues as well as underlying ideologies within the museums. Entertainment and education are considered to be the major functions of the museums from a visitor's point of view. Ideologies, both those that serve to structure the form of the museum and those held by visitors undoubtedly influence the meaning that is made by visitors.

Chapter Five draws together the threads of the argument through a summary of chapters. It also assesses the contribution of this study to academic discourse as well as its limitations. Finally, it puts forward ideas, as generated by the study, for further research.

CHAPTER TWO
THE CHANGING ROLE OF THE MUSEUM

2.1 Introduction

Prior to a comparative analysis of Maropeng (2005) and Origins (2006), both of which this research believes are museums, an understanding needs to be reached as to what constitutes a museum and what role it plays in society. To this end, this chapter looks at the museum from various historical vantage points in order to trace the shifting meaning of the word museum. It looks firstly at the ancient *musaeum,* which was a sacred place for the contemplation of the muses (Findlen 2004). This contemplative nature of the museum space has been an enduring function of museums, challenged occasionally by, for example, American museums of the nineteenth century. It is also increasingly challenged by many postmodern museums, where entertainment is provided along with an educational experience. Neither educational experiences, nor entertainment necessarily provide for contemplation.

Maropeng and Origins are both postmodern museums but this does not reveal itself without an understanding of some of the many roles museums have played (and still play) in society. This study concentrates primarily on the development of the museum in Europe and America. The reason for this is twofold. Firstly, in order to clarify the arguments posed here it is necessary to go a great deal further back in time than the nineteenth century,[1] which saw the advent of the first museums in South Africa. Secondly, most South African museums were colonial and many have remained Eurocentric, despite efforts to make their collections, interpretive strategies and ideologies more representative of the South African population (Marstine 2006:179-181). Maropeng and Origins are part of a group of museums such as the Apartheid Museum (2001) and the Hector Pieterson Museum (2002), which were created in the postcolonial and postapartheid era in the early twenty-first century. Since these did not contain directly inherited strategies and

[1] The South African Museum, located in Capetown, already had a collection by 1825 but only became the responsibility of the Cape government in 1857.

collections from Europe they were freer to pursue new directives. July McGee (2010:171-196) describes the efforts of the South African National Gallery to recast its social commentary by including more Africa art. She finds this effort only partially successful in that the museums collection remains heavily colonial and funds are limited.

To return then to an overview of this chapter; following the notion of museum as a place for contemplation, the sixteenth, seventeenth and eighteenth centuries in Europe saw the rise and development of *studiolo* or *cabinets of curiosities* as the aristocracy collected artefacts and displayed their collections for likeminded people of equal social standing. Although not museums in the way that contemporary museums are open to the general public, the activity of collecting and displaying artefacts became central to the idea of the museum along with the idea of contemplation (Findlen 2004:162-181; Hooper-Greenhill 2005:559; Greenblatt 2005:551).

From the nineteenth century onwards, museums became increasingly open to the general public, eventually admitting both women and children (earlier museums admitted only men). They also became increasingly concerned with educating the public and although learning was already an implicit activity in the sixteenth century, it acquired sharper focus during the twentieth century when educators became part of the exhibit development team. Interestingly, entertainment also gained a sharper focus as research on visitor experience and expectations was conducted (Coombes 2004:278-281; Roberts 1997:15-45).

Nathalie Heinich and Michael Pollack (2005:235) consider the typical museum today to be an institution that safeguards heritage through collecting artefacts, conducting research, and displaying artefacts for the education of the general public. Traditionally, the word museum also includes the building in which these functions occur. Not all museums are typical, however, and there exists a lively debate about what constitutes a museum and what its role in society should be. The following historical perspective does not attempt to arrive at a conclusive definition of the museum. Rather it aims to uncover different

aspects related to the forms and functions of museums from different eras. This in turn, provides a context for the comparison between Maropeng and Origins which is developed in Chapter Four.

2.2 The birth of the museum

A linear chronological history of the development of the contemporary museum is neither possible nor desirable. This is because, in selecting the different roles of the museum in society to trace back historically, different patterns of development emerge. To reduce these various patterns to a linear account is to lose depth and breadth in the understanding of the functions of museums over time and consequently to restrict the understanding of the contemporary museum. Hooper-Greenhill (1990), for example, focuses on the underlying worldview of various periods, a view that results in different modes of presentation, while Paula Findlen (2004) traces the changing concepts of the museum through changes in vocabulary associated with the museum. As a result, Hooper-Greenhill (1990) begins her historical review in fifteenth century Italy, while Findlen (2004) begins with the word *musaeum* (originally a place consecrated to the muses in ancient Greece). Tony Bennet (2007:94), in accounting for the public museum as a display of power, sees the medieval royal entry and the tournament, in their role of making visible the power of royalty, as a more natural precursor to the museum than the fifteenth and sixteenth century collections of the nobility in Europe. Thomas McEvilley (1999:8) goes even further back in time when he relates the modern art gallery (and by extension the museum) to Egyptian tombs in that both remove themselves from everyday life and create an illusion of being outside of time.

In making this statement, however, McEvilley (1999) does not intend to provide a starting point for the formation of museums; rather he is trying to give the reader better insight into the nature of the modern art museum. Findlen (2004), on the other hand, argues that the word *musaeum* is a good starting point for understanding those traditions of collecting, which did ultimately result in the museum proper.

Since the *musaeum* predates Hooper-Greenhill's historical review date and Bennet's reference to the royal entry[2], it does appear to be a good starting point for a historical perspective on museums. According to Findlen (2004:162), the term *musaeum* originally referred to a space for contemplation, most often in nature, consecrated to the nine muses who were the goddesses of poetry, music and the liberal arts respectively. The word also referred to the library in Alexandria, which was a meeting point for classical scholars as well as a research centre (Findlen 2004:162). Thus the word *musaeum* already contained some of the concepts that would later be associated with the museum, namely, contemplation and research.

Since Findlen (2004) is concerned with how the Renaissance humanists adopted and adapted classical concepts and ideals, it is not surprising that she hardly mentions the Middle Ages. When she does mention this period, it is to inform the reader that the term *musaeum* generally carried the meaning of *studium* (study) during this time (Findlen 2004:163). She adds that *studium* became *studiolo* in fifteenth and sixteenth century Italy and the collecting practices of this period reinforce the conflation of these two words. Collections, at that time, consisted of "carefully crafted artefacts placed in conjunction with natural things" (Hooper-Greenhill 1990:1) thereby providing the context for contemplation and thought. As Findlen (2204:163) states, "the philosophical programmes that constituted Renaissance Humanism could not have existed without the proliferation of artefacts that provided food for thought." These collections were also the inspiration for written texts[3] whether of a cataloguing or research nature. The art of collecting, contemplation, and

[2] During the Middle Ages and the Early Modern Period (roughly from the fifth to the sixteenth centuries) in Europe, royal entries and tournaments were ceremonial activities celebrating the power and strength of rulers and knights. The formal entry of a ruler into a city was accompanied by a procession and ceremonies organised by the civic authorities to pay homage to the ruler. The tournament was a mock battle in which two groups of knights, or two individual knights, attempted to knock each other off their horses with blunted instruments (*Oxford Shorter Dictionary*. Sv 'tournament').

[3] These texts consisted not only of catalogues, such as Calzori's catalogue, described by Aldrovandi as his "little museum", but also of research projects such as Ferranto Imperato's *Historia Naturale* of 1599 (Findlen 2004:168).

writing were thus interwoven and the most suitable space for this practice may indeed have been the *studiolo* (Findlen 2204:176).

The *studiolo* was a quiet place best suited for contemplation and was located next to the bedroom. This is borne out, according to Findlen (2004:176), "by surviving plans of late renaissance museums". The French word *cabinet* referred to the closet beyond the main bedroom (Findlen 2004:176) and the collections of the fifteenth and sixteenth century are still referred to as cabinets as in, "cabinets of the world" (Hooper-Greenhill 2005:559) and "wonder cabinets" (Greenblatt 2005:551).

The closed spaces described above suggest that *musaeum* had lost its meaning as a place consecrated to the muses. According to Findlen (2004:164), however, this is not necessarily so, and she states that:

> reviewing the classical literature on *musaeum,* it is evident that the idea of collecting was simultaneously an open and a closed concept. While gardens and groves were museums without walls … the conflation of study with *musaeum* spatially confined it.

Furthermore, studios such as Paulo Giovo's *Museo* (1536) near Lake Como, Leonello d'Este's *studio* (circa 1445) at Ferrara, and Federigo Montefeltro's *Tempietto della Muse* (1550) at Urbino all contain paintings of the muses as decorative motifs, clearly demonstrating a link between collecting and contemplating the muses (Findlen 2004:164-165).

The museum of the sixteenth and seventeenth centuries was private in that its space was the study in a domestic home. Although the museum was not open to the general public, which made it private in this sense too, it did attract scholars who were welcome because of the collector's desire for self-promotion. Furthermore, unlike the *studium* of the Middle Ages, the sixteenth and seventeenth century museums brought the outside world (public) into private homes to be viewed by the intellectual and cultural elite drawn by "informal networks of correspondence" (Findlen 2004:177). These 'visitors' were addressed as connoisseurs capable of appreciating the collections.

During the seventeenth and eighteenth centuries museums were, most often, still private and exclusive, to the point where sometimes only the prince had access (Bennet 2007:93). Eventually the space of the museum became less confined as the *studio* became more of a *galleria,* creating a space which one could walk through and which could therefore accommodate more people at one time (Findlen 2004:180-181). The Ashmolean Museum at Oxford, which opened its doors in 1683, was the first museum to be truly public in that entrance was not determined by class or gender. It was not well received by the intellectual elite, even though this elite was expanding owing to the advent of printing. No longer was literacy confined to the courts, universities and the church.

2.3 The nineteenth century museum as a public space

The Ashmolean Museum was an exception to the rule and it was only in the nineteenth century that the museum as a public space emerged more widely. An example of this is the Musée du Louvre in Paris where material possessions taken from the aristocracy during the French Revolution were made available for viewing by the general public. The museum became a space where the citizens of the newly created French Republic could become part of the new values of freedom and equality. New curatorial practices emerged such as, for example, the Louvre's predilection for organising its collection around the "great epochs of civilisation" (Duncan 2004:261). To illustrate this, works from ancient Egypt, Greece and Rome were placed in the most central space in order to emphasise their position as the origins of Western civilisation. From these central spaces, halls and galleries were arranged along marked axes, thereby drawing visitors along a route through which an "iconographic narrative" (Duncan 2004:256) unfolded.

The "gentlemanly hang" (Duncan 2004:252) of the eighteenth and early nineteenth centuries, common to European aristocrats, which displayed art according to the formal qualities of the 'masters', was replaced in the Louvre by a system showing the historical evolution of various schools of art. Paintings were arranged into schools and labels were used. This, along with

the decorative narrative on the ceilings depicting the great periods of civilisation (culminating in the depiction of modern France), contributed to the message of educating the visitor. The earlier aristocratic installation, in contrast to that of the Louvre, assumed that the visitor was already educated and the experience elicited by the display was pleasure at recognising one's own expertise (Duncan 2004:255-256).

Although the evolution of other European museums was more piecemeal than that of the Louvre, it was nevertheless prototypical of public museums. Museums were also influenced by changing concepts concerning knowledge and the order of things (Duncan 2004:250-256; Bennet 2007:90-96; Hooper-Greenhill 1990:1-2). According to Tony Bennet (2007:96), the nineteenth century emergence of discrete disciplines, such as anthropology, geology, biology, history and history of art within the general field of knowledge, resulted from and influenced the development of the public museum. These changes in 'world view' were reflected in the museum display of the time as distinctions were made between natural things and manmade things, between "the 'authentic' and the 'fake' … where previously a complete series had been more important" (Hooper-Greenhill 1990:1-2). Bennet's (2007:95) observations concur with those of Hooper-Greenhill when she states that, "the stress was placed on observable differences rather than their hidden resemblances." During the nineteenth century, curiosities, art works, anatomical remains and so forth were no longer placed side by side, but were arranged as part of a series and according to the discrete knowledges mentioned above, that is geology, biology or history of art. The common object, representative of, for example, the laws of nature or science, or ethnographic significance, was given priority over the curious or exotic (Bennet 2007:95-97). At this time, museums addressed their visitors as bourgeois citizens of the nation in which they resided, unlike the earlier aristocratic museums where the visitor was addressed as a connoisseur.

From the mid-nineteenth century onwards, as Charles Darwin's theory of evolution began to hold more sway, museum exhibits began to be arranged according to a timeline rather than according to taxonomic tables. The

hierarchical nature of evolution, when applied to the 'evolution' of civilisations, suggested that early civilisations were less civilised than later ones. Bennet (2007:96) states that "Jonard, curator at the Bibliotéque Royal, had argued, as early as 1820, for an ethnographic museum that would illustrate" civilisations that were not very advanced. This had significance for later developments in museum display where issues of the adequacy of representation were taken up by minority groups and those with different values to the dominant paradigm.

To summarise thus far, the significant developments of the museum in the nineteenth century are fourfold. Firstly, museums became open to the general public. Secondly, displays were ordered according to disciplines and historical or evolutionary development. Thirdly, there was the assumption that the museums' collections were permanent and had an educational function, and finally that museums were a controlled environment expressing national values, largely those of the bourgeoisie (Bennet 2007:97; Smith 2000:7).

Although most museums in Europe were open to everybody by the middle of the nineteenth century not everyone was equally welcome. Museums used various tactics to discourage "that recalcitrant portion of the population whose manners remained those of the tavern and the fair" (Bennet 2007:99). Following a Foucauldian critique of institutional power, it can be argued that many of these tactics also served to control the behaviour of people who did visit museums.[4] Apart from charging an entrance fee, which would exclude the poorer section of the population, there were rules regarding not eating or drinking on the premises. Guidelines were given for appropriate dress, and visitors were prevented from touching the artefacts on display. These restrictions controlled the behaviour of visitors, but for others, made the museum an unattractive way to spend their leisure hours (Bennet 2007:93-99).

[4] I am referring here to Michel Foucault's widely used text *Discipline and punish: the birth of the museum* (1977), which underpins the work of theorists such as Mieke Bal and Tony Bennet.

Not only were visitors controlled by rules, but the spatial arrangement of a building and its architecture also served this purpose. Through innovative architecture an environment for self-regulation was created. The Crystal Palace (1851), designed by Joseph Paxton (1803-1865), although not a museum but an exhibition hall, illustrates this relationship between architecture and human behaviour and was influential in exhibitionary and museum architecture.

Figure 1: The Crystal Palace. 1851.
(Flatrock.org.nz).

In the design of the Crystal Palace (Figure 1), glass and iron, which were new building materials at that time, allowed for the enclosure and illumination of large spaces. Exhibits were arranged along the sides and in the centre of the space, thereby allowing for an orderly flow of people through the space. Elevated vantage points in the galleries allowed people to observe other people, thus establishing a culture of self-surveillance. Similarly, in modern museums, surveillance is carried out by security guards and cameras. The museum thus remains a place where the behaviour of the public is modified and controlled (Bennet 2007:101). In short, the nineteenth century museum "formed a part of the emergence of those techniques of regulation and self-

regulation … whereby the behaviour of large populations is subject to new forms of social management" (Bennet 2007:98).

2.4 Educational imperatives and national ideology in the museum of the early twentieth century

The early twentieth century saw the continuation of many of the themes elaborated above, namely, the increasingly public nature of the museum (now aiming to attract *families* from all classes), the museum as an educational institution, and the use of the museum as a vehicle for spreading and strengthening national ideology.

The notion of the museum as an educational institution is illustrated by the willingness of the Museums Association (the official body of museum professionals in Britain) to align itself with government education policy. In 1902, the Education Act in Britain announced its aim of providing education for everybody. As part of this initiative, visits to museums by school children in the company of their teachers were considered to be part of the curriculum. This recognition of the educational potential of museums by the government led to discussions within the Museums Association. These discussions centred on proving that the museum could be a viable educational institution, a serious scientific resource (in the case of the ethnographic museum) and an institution that could accommodate an increasing diversity of visitors (Coombes 2004:278).

The use of the museum to spread national ideology takes on a different meaning with the understanding that many Western nations still possessed colonies at that time. The prevailing ideology sought not only to strengthen a sense of national identity within the nation, but also to establish the idea of national sovereignty in relation to colonies. Ethnographic museums reflected the inherent contradiction in the, then, political thinking, namely that colonies were seen as a homogeneous part of the mother nation while at the same time being seen as distinct from, and inferior to (from an evolutionary perspective), the mother nation. For museum curators this presented the

question of whether a system of geographical or typological classification was the most appropriate presentation format for the indigenous cultures from these colonies (Coombes 2004:278-288). Larger, national museums tended to use a geographical system of classification. The belief was that differences in cultural practices were aligned to geographical regions and environments and this was considered to be a 'natural' grouping (Coombes 2004:283).

Smaller museums such as the Pitt Rivers Museum (1904) in Oxford used a typological classification system. Artefacts were organised according to type, for example, woven grass baskets, and according to broad historical periods such as the Stone Age or the Iron Age. This form of arrangement was thought to convey more clearly the evolution of mankind. By 1902, it had already become accepted that "physiognomic characteristics were accurate indicators of intellect and morality" (Coombes 2004:286) which in turn was an indicator of the level of evolution. As a result many museums included skulls, skeletons, plaster casts and photographs in their displays of colonial culture, whether in colonised countries' museums or those in the 'mother land' (Coombes 2004:283-286).

At this point it becomes useful to compare colonial expositions with museums. While the two institutions maintained their individual identity at that time, they competed for the same audiences, with the expositions drawing the larger crowds. This was largely owing to the mix of 'scientific knowledge' and entertainment. In contrast to ethnographic and anthropological museums, exhibitions were not restricted to representing only the colonised subject via artefacts. They were able to *recreate* the colonised subject, often by constructing mock villages complete with professional performers acting out roles attributed to the subject. Figure 2 shows a photograph of one such village at the California Midwinter International Exposition (1894) in San Francisco (Coombes 2004:280).

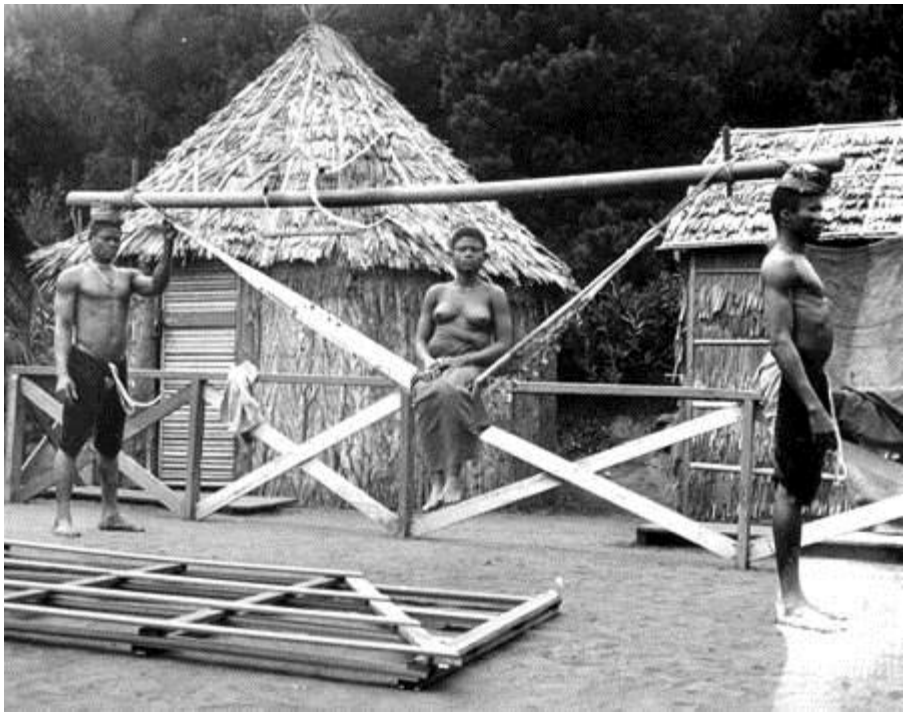

Figure 2: Dahomey village at the California International Midwinter Exposition, 1894.
Photograph by Foorman.
(cti.itc.virginia.edu)

This combination of learning and entertainment in a safe and accessible environment, allowed the visitor to “travel metaphorically without ever having to leave the site” (Coombes 2004:281). The visitors also felt themselves to be actively involved in the event rather than being passive viewers, feelings evoked by the museums of the time (Coombes 2004:281). This mix of education with entertainment has become one of the traits of the contemporary museum. So too has the concern with actively engaging the visitor in order to improve the visiting experience on both an educational and an entertainment level.

Curators of museums, in response to the popularity of expositions, sought to validate museums as providing the ‘authentic’ educational experience through strategies such as the orderly arrangement of artefacts and appropriate classification. However, curators saw the ‘temple’ type of building exterior, with its “imposing and distancing connotations” (Coombes 2004:280) as an obstacle to attracting the same number of visitors that exhibitions did, even though the museums had more academic credibility. Colonial exhibition halls,

often specifically built for the exhibition, were not as monolithic and, having larger and more flexible spaces, allowed for an impression of endless choice. This also had the effect of attracting larger audiences. This impression of endless choice is not altogether accurate, as Bennet's (2007:101) description of the Crystal Palace (1851) makes evident. He shows how exhibition halls were areas of social control owing to the fact that elevated vantage points encouraged self-surveillance on the part of the audience thus limiting their choice of behaviour (Bennet 2007:101; Coombes 2004:280).

2.5 The modern museum

Both the Museum of Modern Art (MoMA) (1930) in New York, and the Crystal Palace, give the impression of endless choice whilst invisibly controlling the visitor. In MoMA it is not self-surveillance that controls the visitor, however, but a carefully regulated route through the exhibits, which affects the visitor's experience of the artworks. This control is contrary to the modernist ideal of the "white cube" (O'Doherty 1999), a neutral space (rather than a controlling one) that would allow the artwork to speak for itself.

Duncan and Wallach (2004:484) nevertheless classify MoMA as modern, unlike the Metropolitan Museum of New York (1880), which they classify as traditional. According to them, MoMA (Figure 3) was (and is) modern both from an architectural and an ideological point of view. Architecturally it was inspired by Bauhaus design having clean and simple lines, uncluttered forms, and a steel and glass facade. Ideologically, it addressed visitors as individual subjects, capable of responding to the intrinsic message of the artworks. In its simplicity and clean unsentimental architecture, and in the way that the artworks were arranged logically in terms of increasing abstraction, the museum adhered to modernist principles of rationality and scientific progress (Duncan & Wallach 2004:484-489).

Figure 3: MoMA. 1930.
(visitingdc.com)

Duncan and Wallach (2004) use both the terms *modern* and *modernity* in their discussion of MoMA. A brief discussion of the meanings of these terms, as well as the term *modernism* ensues for reasons of clarity. Marita Sturken and Lisa Cartwright (2001:240-250) differentiate between *modern* and *modernity,* but not between *modernity* and *modernism*. They describe the term *modern* as being used by many societies that regard themselves as breaking with the past. The term *modernity* on the other hand, relates to a specific period, beginning with the age of the Enlightenment and continuing up until the mid-twentieth century. Although, in most instances, they use the term *modernity* synonymously with *modernism,* when speaking of art and film styles and the characteristics of these styles, they specifically use the word *modernism.* Stuart Hall and Bram Gieban (1992:15) use the terms *modern* and *modernity* interchangeably to refer to periods that have a sense of themselves "as representing a culminating point of history". There are thus modern periods in "the Renaissance, the Enlightenment and the nineteenth century" (Hall & Gieban 1992:15). They note, as do Sturken and Cartwright (2001), that the idea of modernity became much stronger in the late nineteenth and early twentieth centuries and refer to this period as *modernism*. For the purposes of

this study, the term *modernity* refers to the development of modern ideas from the eighteenth to the mid-twentieth century, while the term *modernism* is used more specifically for the late nineteenth and early twentieth centuries (Hall & Gieban 1992:15; Sturken & Cartwright 2001:360).

MoMA thus falls into the modernist era, not only because of the date of its inception, but also, as mentioned above, because of the architectural style and the rationality of the sequence of artworks on display. Duncan and Wallach (2004:488) describe how the permanent collection was housed in rooms that were linked sequentially so that the visitor was forced to see the artworks as "principal moments and turning points of this [modernist] history". Artworks that did not fit neatly into this historical framework, which culminated in Abstract Expressionism, were placed in corners or along a secondary route. Those works considered key to the development of abstract modern art were often hung so that they were visible from a distance and framed by doorways thus giving them more emphasis (Duncan & Wallach 2004:488-489).

Although Duncan and Wallach (2004:489) present MoMA as a typical modernist museum, they also describe it as "a rational cover wrapped around a irrational core". The "irrational core" is the result of the windowless, winding route demarcated with white featureless walls (meant to draw more attention to the artworks) that created a ritualistic effect. This effect was further enhanced by the arrangement of artworks that began with an intellectual approach to perception, such as Cubism, and progressively became less attached to perception of the 'real' world, ending with a "mystical faith in which the abstract form symbolized the Absolute (Rothko, Newman, Reinhardt)" (Duncan & Wallach 2004:494).

How does this "mystical faith" relate to MoMA as a modernist museum? Convictions such as the positive effects of technology, science, rationalism and a belief in universal 'truths' are usually associated with modernism. Yet, while these strands of thought were evident in modernist thought and practice, they do not do justice to the period as a whole. Sigmund Freud's study of the Unconscious, Johannes Itten's attribution of spiritual qualities to colours, and

Marcel Duchamp's self destructing artworks bear testimony to a period that sought also to study or express the less rational side of human behaviour. Furthermore, the belief in the objectivity of science was often the visible side of an ideology that was not objective or rational. The following quote, which relates to an analysis of The Temple of German Art (Munich 1934), gives an example of how 'science' can be of service to extreme or irrational ideologies:

> Racism was a product of 'scientifically' legitimated thought. This discourse was based on modernist ideas such as genetics and natural and progressive evolution (Esslinger 2004:327).

MoMA, then, although not 'extreme', can be seen to encompass both the rational and the irrational strands that are part of the modernist era. In quite a different context (in her exposition on American patriarchy), Donna Haraway (2004:242) points to the irrationality of revering technology while at the same time revering nature. She states that nature is "a potent symbol of innocence partly because 'she' is imagined to be without technology, to be the object of vision, and so source of health and purity" (Haraway 2004:242).

The Temple of German Art (1934), (Figures 4, 5) was a modernist museum in that the architecture was restrained and geometrical and the artworks were hung so as to be, from the visitor's point of view, "a trap for the gaze" (Esslinger 2004:330). At the first exhibition at the Temple in 1937, namely the Great German Art Exhibition (GGAE), works were hung at eye level with a minimum of labelling. A master-narrative of 'universal truth' was evident in the mode of exhibition and the supporting catalogue. Unlike the permanent exhibition at MoMA, however, the GGAE did not celebrate abstraction in art, which, along with other avant-garde characteristics, was considered degenerate. Degenerate, in this instance, was equated with a non-citizen, an implication that the German avant-garde used to their advantage by erecting an art exhibition by the name of *The Degenerate Art Show* in a park across the way from the GGAE. Artworks exhibited at the GGAE were representational and "legible" (Esslinger 2004:325) and intended to evoke the idea of the 'ideal' German citizen, and could certainly not be considered modernist (Esslinger 2004:321-325).

Figure 4: The Temple of German Art, 1934.
(www.german-architecture.info)

Figure 5: The Temple of German Art, 1934.
(www.german-architecture.info)

In the same way that the French republic gave the citizens a space, the Musée du Louvre where they could internalise the new values of freedom and equality, so Adolf Hitler (1889-1945)[5] gave a public museum to his people so that they could participate in their culture. The Temple of German Art "acted as a frame wherein a prescribed process of forming the ideal citizen, a subscriber to Aryan spirituality, the *Volk*, was catalyzed" (Esslinger 2004:321). While it was established in the period of modernism, the Temple is more closely related to the mid-nineteenth century than it is to modernism.

[5] Hitler became Chancellor of Germany in 1933 and Führer in 1934. As part of promoting German nationalism he advocated the idea of a superior Aryan race. Anti-semitism and anti-communism were part of his propaganda. Hitler's foreign policy aimed at developing German nationalism and was substantiated by the idea of *Lebensraum* (living space). He committed suicide in 1945 when the Red Army overran Germany (History place – the rise of Hitler [sn]).

The fact that it was named a *Temple* is also significant. The modernist era is associated with increasing secularisation, which appears at odds with the use of the word *temple* and its connotations of worship. In the analysis of MoMA, however, Duncan and Wallach (2004:483) state that "museums, as modern ceremonial monuments, belong to the same architectural class as temples, churches, shrines and certain kinds of palaces". Hooper-Greenhill (1990:2) refers to the museum "as a universal sacred space where Man can rediscover and reconstitute his fragmented self". The following quote describes a modernist gallery but is equally applicable to a museum:

> A gallery is constructed along laws as rigorous as those for building a medieval church. The outside world must not come in, so windows are usually sealed off. Walls are painted white. The ceiling becomes the source of light … modernism's transposition of perception from life to formal values is complete (McEvilley 1999:15).

The descriptions of modernist museums given above provide a strong link between the concept of a temple and that of a museum during the modernist period. This is not to deny that during this period there was an increasing trend towards secularisation, but rather to emphasise that the modernist period was not exclusively secular, rational and scientific.

Another theme, which runs through the modernist period, and is relevant to the development of museums, is the rapid change in technology owing to industrialisation. Reactions to this change were both positive and negative in that technological change was seen as necessary for progress, but also as alienating (Sturken & Cartwright 2001:241). This ambiguity is evident in the Temple of German Art because, although new technology was used, both for natural and artificial lighting, this technology was hidden from the visitor's view, for any display of technology was considered to appear too 'modern' which "was seen as anarchistic" (Esslinger 2004:335).

The American Museum of Natural History (AMNH, New York 1868) is also an example of contradictory beliefs within the scheme of modernism as a whole. Unlike natural history museums in Europe, the AMNH was privately funded by

wealthy capitalists such as the Rockefellers and Roosevelts. These men had a great influence on what was exhibited and in which way. By 1910 the museum had developed “a major scientific reputation in selected fields, especially palaeontology, ornithology, and mammalogy” (Haraway 2004:245). The method of display, mostly dioramas, and the magazines and books that accompanied exhibitions, mainly visual, ensured that the museum was popular with the general public. Although not as obviously contradictory as the ‘worshipping’ of nature and technology, there is a tension between being populist and scientific. Haraway (2004:245) says of the AMNH that “the sponsors of the museum liked a science that stored facts safely [and] they liked the public popularity of the new exhibitions”.

The artefacts in modernist museums, and more particularly the artworks in modernist art museums or galleries, were intended to have meaning in their own right. In order to achieve this, the museum environment was spacious, uncluttered and often had white walls and ceilings with no access to outside views. Ironically, this did not always give the artefacts or artworks pride of place. Brian O’Doherty (1999:29) cites an example of this when he describes how Frank Stella’s early shaped canvasses altered “for good the concept of the gallery space”. This, O’Doherty says is because the shaped canvasses set up a dialogue between their edges and the rectangle of the wall. The result is that the wall is given more prominence and fails to remain a neutral backdrop in relation to the paintings. As can be seen in Figure 6, the size of the canvas in relation to the size of the wall, and the negative wall shape created by the empty centre of the canvas, also contribute to this effect.

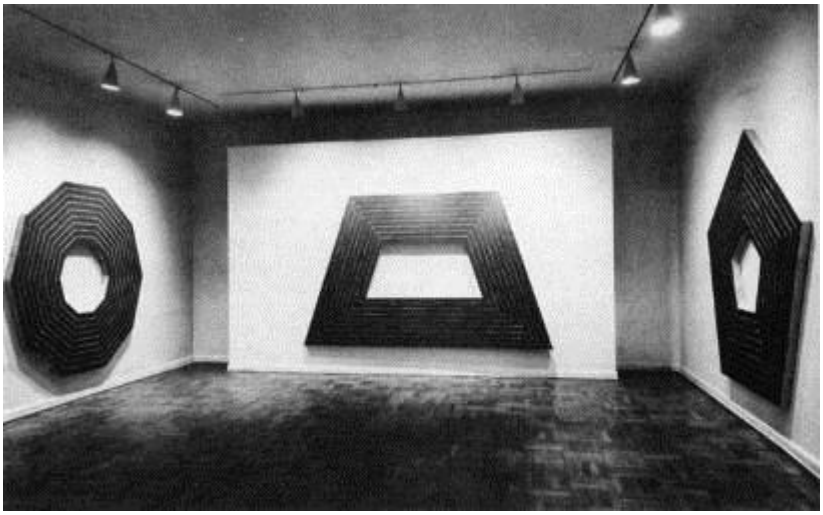

Figure 6: Frank Stella, installation view, 1964.
(O'Doherty 1999:28).

Suzanne Pagè, curator of the minimalist exhibition from the Panza collection at the Musèe d'Art Moderne de la Ville de Paris, describes to Rosalind Krauss in 1990 "the desperate effort of remodelling vast tracts of the museum to give it the burnished neutrality necessary to function as a background to Flavins and Andres and Morrises" (Krauss 2004:601). Although this exhibition does not qualify as a modernist exhibition because of its date, the fact that the space has been remodelled for the sole purpose of displaying modernist artworks makes it at least partially so. Krauss (2004:601) describes how, in the end, and even though she is happy to see artworks she has not seen since the 1960s, it is the museum space that attracts her attention rather than the artworks. Pagè directs Krauss to a position in the museum where she can see three Flavins. The Flavins in this instance are serial light sculptures. Krauss describes the effect as follows:

> International Style columns enter our point of view. We are having this experience, then, not in front of what could be called the art, but in the midst of an oddly emptied yet grandiloquent space of which the museum itself – the building – is somehow the object (Krauss 2004:601).

What can be deduced from the observations of both Krauss (2004) and O'Doherty (1999) is that, despite the modernist attempt to provide a neutral environment (the white cube aesthetic) where only the art or object would 'speak', a relationship nevertheless existed between the museum, or gallery,

and the art. At times the museum environment even dominated in the communication process. Despite the arguments, such as those by Krauss (2004) and O'Doherty (1999), that indicate that the museum cannot be a neutral space where the object has primacy, the object remained the focus of modernist museums. The object was collected, conserved and displayed for the purposes of research and education. Whilst Krauss (2004) and O'Doherty (1999) discuss the relationship between the object and the museum environment, they ignore the role of the visitor in the communication process. It was in the postmodern museum that the relationship between the visitor and the museum was reconsidered with more emphasis now placed on the visitor. This shift in emphasis is not a sudden break in museum history, for even though modernism was "originally oppositional, [and] defied the cultural order of the bourgeoisie and the 'false normativity' (Habermas) of its history" (Foster 2002:x), it is today the mainstream. The postmodern museum, being relatively new, now fulfils the role of contesting mainstream concepts and practices.

2.6 The postmodern museum: forms and functions

Kenneth Hudson (2004:87) cautions however "what one should never do is to invent an imaginary phenomenon called 'the museum'. It is a meaningless abstraction". Although Hudson intended this comment to apply to museums in general, it is particularly relevant to the postmodern museum. Given that there are an infinite number of 'institutions' that call themselves museums, or are considered to be so by the general public, and that a great number of these can be considered to be postmodern, no single definition can encompass all postmodern museums. The following quote from an introduction to postmodernism highlights some of the issues that are also pertinent to the museums in this era:

> There is no recourse, within the terms of postmodernism, to a singular 'real' history … or any singular 'real' style or art of the age. And no respect is maintained for the distinctions traditionally drawn between discrete disciplines of cultural investigation or the division within the cultural debate itself between forms of high and low culture (Easthope & McGowan 2004:204).

If there is no recourse to a single (historical) reality, how is the postmodern museum to display and comment on diverging or opposing realities? Does the museum have the authority to select given 'truths' and 'facts' in order to fulfil its traditionally accepted educational and research role? These questions are typical of the postmodernist challenge of modernist beliefs. Postmodernism questions the modernist belief in a universal and knowable truth and a positive progression of society. The postmodern stance is that the 'knowledge' of truth is illusory and that 'progress' is not necessarily positive. In fact, postmodernism questions whether there is a single unified subject in the sense of an 'I' who can experience the world directly, which, according to these terms then, makes determining the 'truth' impossible.

Postmodernism holds that all experience is mediated through cultural conventions, language, the media and so forth (Sturken & Cartwright 2001:251). The postmodern museum is thus one of the cultural institutions that mediate 'reality' for the visitor/audience. The difficulty for postmodern museum curators and directors, in a world of multiple realities where "discrete disciplines of cultural investigation" cease to have clear cut distinctions, is what to present to their audiences and how best to do this. Hudson's (2004:88), view that the essential quality of museums as places "in which objects – 'real things' – are used as the primary means of communication" comes into question. Suzanne Keen's (2004:1) view that "the focus will sharpen on museums as collections of knowledges rather than of objects" sits more comfortably with postmodern ideas, although this does not answer the question of which knowledges are most relevant to a given museum or audience. The idea of Angelina Russo and Jerry Watkins' (2006) of the 'post-museum', which uses virtual technologies, supports Keen's view. They argue that the modern museum claimed power through the display of objects, while the 'post-museum' is more concerned with audience participation than it is with the "discourse of power and knowledge" (Russo & Watkins 2006:1). Traditionally, the functions of collecting and conserving have been an important part of museums' agendas and many museums "pride themselves on being the last refuge of the 'real' thing" (Ames 2004:87). The 'authentic' object cannot, however, communicate entirely on its own a vast amount about

the culture in which it originated. This legitimises, in Michael Ames' (2004:86-87) view, the use of other media to broaden the experience and meaning making for the visitor.

The shift in focus, away from the object or artefact, towards audience participation is part of a larger "democratisation of museums" which,

> Ames shows … has been driven by two forces that are unlikely allies: consumerism, as museums compete for leisure time with shopping malls … and political activism, as submerged groups and others … use museums as sites to contest and resist hegemony (Bean 1994:887).

While some authors (e.g., Bean 1994; Falk & Dierking 2000) are positive about current changes in the form and practice of museums, terms such as "disneyfication" (Roberts 1997:69), "infotainment" and "theme parks" (Sorenson 1989:60), as well as "packaging and dispensing cultural information" (Preziosi & Ferago 2004:1), suggest that there is some concern that the practice of drawing larger crowds by providing entertainment is in danger of trivialising the museum experience. Margaret King (1996:5) says of Walt Disney that he is a "populizer", "unduly over sentimentalizes" and mentions also "the education/entertainment mix ('edutainment') now so familiar in museum exhibits". The Canadian Museum of Civilization (CMC, 1989) is an example of a museum derided by the press for "substituting Disneyland-style pyrotechnics for educational substance" and for having an "emphasis on illusion rather than real artefacts" (Ames 2004:86).

This trend of mixing education with entertainment is not new. As mentioned previously, the colonial expositions of the mid-nineteenth century "provided a mix of 'scientific knowledge' and entertainment. The mix of real artefacts with, for example, mock villages and performing actors attracted larger crowds than permanent exhibitions in museums did" (Coombes 2004:280-281). While museums at that time responded by providing the so called 'authentic' educational experience, it was not until the advent of postmodern discourse that the 'authentic' object became a subject for discussion as the result of

increasingly sophisticated methods of reproduction, which often made recognition of the 'authentic' versus the reproduction unclear.

Postmodernism does not value 'high art' above 'low art' and is therefore more comfortable with providing entertainment together with education. The postmodern museum uses a variety of media, requiring different modes of perception, in order to achieve this and to enhance the visitor experience. The CMC (1989), mentioned previously, as having been derided by the press, is an example of such a museum. Theatre, art, electronic technology and theme park display techniques are used to engage the visitor. Rather than "substituting Disneyland-style pyrotechnics for educational substance", according to Ames (2004:86), the CMC substitutes "the authenticity of the visitor experience for the authenticity of the 'real' object". This focus on the visitor rather than the object is one of the characteristics of many postmodern museums. This does not mean that the content of the postmodern museum is unimportant and lacks the input of in depth research, which is necessary for visitors to have a meaningful educational experience. It does mean that postmodern museums question whether the object or artefact is always the best medium for communication with the visitor.

In discussing the modern museum, Angelino Russo (2004:2) states that the physical space of the museum provides a place for "back telling, where the museum tells a story through marks left by a person, an animal or a thing" and where the visitor passively follows this narrative. In contrast to this, postmodern museums, as discussed previously, use a variety of techniques and media to engage the visitor. Another of these techniques is the creation of 'virtual' displays and/or 'virtual' museums.

Virtual Reality, as a term referring to computer mediated environments, was originally used in the 1980s to refer to the three dimensional imagery created by using a head mounted display (HMD). It now refers to a wider range of technology, which allows the user to become immersed "in the image space, moving there and interacting in 'real time' and intervening creatively" (Grau

2003:3). In other words, technology provides an experience that feels real but is in fact artificially generated.

Marie-Laure Ryan (2001:12) encapsulates the two everyday meanings of the term 'virtual' as follows:

1. virtual meaning the imaginary; and
2. virtual as dependant on computer technology.

The first meaning refers to virtual reality's ability to immerse the viewer in a reality outside of and more profound than, everyday reality (virtual as imaginary). The second refers to the use of computer technology for the creation of seamless distortions of space and time in relation to the viewer's interaction. In other words, the technology allows for real sensations experienced in real time in response to actual viewer behaviour, but set in an artificial environment. The consequences in terms of meaning making in an environment known to be artificial are discussed more fully in Chapter Three.

In relation to the museum, the above definitions of the term 'virtual' are most evident in *Place-Hampi* (Figure 7), which was first installed in Lille 3000 in France in October, 2006. Hampi is the UNESCO World Heritage site of Vijayanagara, a ruined medieval city in India. Stereoscopic views of the site, ambisonic sounds and animations of Hindu gods relevant to the site have been combined in order to create a 'virtual' environment (Figure 6). Physically detached from the actual site, *Place-Hampi* is nevertheless capable of expressing physical and symbolic characteristics similar to those experienced on the actual site (Kenderine, Shaw, Favero & Brown 2008).

Figure 7: *Place-Hampi* installation. 2006.
Kenderine, Shaw, Favero & Brown
(archimuse.com)

Place-Hampi attempts not only to transport the visitor to Vijayanagara, but also to communicate the sacred nature of the site through the use of Hindu symbolism. The totally immersive environment of *Place-Hampi* is more evocative than everyday reality and thus meets the criterion of 'virtual' as 'imaginary'. The viewer, using a navigation interface, moves the imagery around a cylindrical screen, thereby mimicking the visual effect of swivelling one's head from side to side. In this way the technology, which is to a large extent digital, apparently allows for 'real sensations' in an 'artificial environment'. The second definition of 'virtual' as dependant on computer technology is therefore also met.

The Internet provides another platform for understanding the 'virtual' in a museum context. Lori Gross (2001) explains how the Museum Loan Network enables viewers to explore different museum spaces and the objects within these spaces, from different angles on eight Internet sites. According to Gross (2001:3), the popular predictions that having access to 'virtual' museum sites "would make visiting museums obsolete have proven false, and … museum crowds are growing along with web access to museum sites". This observation suggests that the virtual is not superior or inferior to the actual, but that the two have a mutual relationship.

As has been demonstrated through investigating museums from different eras, their form and function change according to the societies and time frames within which they exist. It would thus be highly unlikely that there would be consistency in the museum experience over time and place. For example, a nobleman visiting a 'cabinet of curiosities' would not have the same experience as a French citizen celebrating the new republic by visiting the Louvre. Each individual visitor is also likely to have a different experience from other individuals even in the same museum because visitors bring with them individual expectations, personalities and levels of understanding. Despite all this diversity, each visitor would expect to engage with the museum exhibit and environment in a way that would allow for a meaningful experience to take place. The following section explores what this meaningful experience might be and how it might be achieved.

2.7 The museum experience: engagement, meaning making and entertainment

In order for the museum to provide a meaningful experience for the visitor the exhibits need to be engaging. As Naomi Haywood and Paul Cairns (ref incomplete 2-3) state, "the goal of museums is … to be able to reliably design exhibits for learning and engagement"; they also acknowledge that "it is not really known what engagement is". James Bradburne (2008:xi) agrees that visitor engagement is the museum ideal and offers a possible definition of what is meant by engagement in the following quote:

> [engagement] means more than the self sustained activity of a hamster on a treadmill – it is self absorbed concentration in which users direct their own learning.

As can be seen from the above quotes, Haywood and Cairns and Bradburne (2008) link engagement and learning. This link should, however, not be automatically assumed. While it is difficult to conceive of learning taking place without engagement, it is feasible to consider engagement taking place without learning. Bradburne's (2008:xi) example of the "hamster on the

treadmill" is one such instance, even though this does not concur with his concept of engagement.

Walter Benjamin (2001:48-70) and Oliver Grau (2003:13) provide other perspectives on engagement that do not refute Bradburne's (2008:xi) definition but suggest other dimensions not elaborated upon by him. Benjamin's (2001:48-70) *Art in the age of mechanical reproduction* was originally written in 1936, but still has relevance today in that he discusses different modes of engaging with different media. The media he discusses namely, painting and film, are still prevalent today, but more importantly he introduces the concept that different media provide different forms of engagement. This is central to the idea that new media in the museum environment will provide a different form of engagement than the display of artefacts. Benjamin (2001:54) uses the phrase "modes of participation" to distinguish between two different types of engagement. The first is *contemplation,* and he uses the viewing of an original painting as an example of this type of engagement. In engaging with paintings, viewers mentally project themselves into the paintings and by allowing associations to develop, arrive at meaning.

The second type of engagement Benjamin terms *distraction*. This mode of engagement is experienced in a cinema where the continual change of image and the manipulation of space and time impede the process of associations; instead, things are noticed almost incidentally. According to Benjamin, contemplation occurs predominantly through optical perception, while distraction is predominantly tactile. Although a film requires audio and optical perception, Benjamin describes it as tactile because the audience feels as though it is moving through space and time, much as if it were moving through a building. Perhaps 'kinaesthetic' would be a more apt term for this than the term tactile. Benjamin does not elucidate whether these forms of engagement are primarily cognitive or affective, but they are clearly mental rather than physical. It is with the advent of new media that the discourse on physical engagement and meaning making is taken up by, for example, Mark Hansen (2004) and Brian Masumi (2002).

Oliver Grau (2003:13) refers to another form of engagement which he terms *immersive*, a term that has increasingly become associated with virtual reality. He describes immersion as a process that is totally mentally absorbing and "is characterized by diminishing critical distance to what is shown and increasing emotional involvement in what is happening" (Grau 2003:13).

Grau's (2003) "critical distance" is much the same as Benjamin's (1968) "contemplation" in that the viewer is distant from the object and projects mental activity, in the form of associations or analysis, onto it. Their views on distraction and immersion as these pertain to engagement, also have elements in common, particularly since Benjamin uses the film theatre to explain his concept. Films are, to a large extent, immersive in that the darkened space cuts the viewer off from the 'real world'. In a film, however, viewers do not have the feeling that they can direct their experience as they do in a virtual environment. Although Benjamin does not discuss the affective aspect of engagement, Grau does, and his description of "emotional involvement' can also be applied to distractive engagement. Both Benjamin and Grau describe the mental aspects of engagement rather than the physical. Physical forms of engagement, more pertinent to new media theories of interactivity, are discussed later in this study (see 3.2).

The question is, do different forms of engagement alter the meaning making process and outcome? The term 'meaning making' is used in the hermeneutical sense as described by Hans Georg Gadamer (2002:315) when he states, "working out appropriate projections, anticipatory in nature, to be confirmed by 'the things' themselves is the constant task of understanding". Meaning making in the museum environment is, according to Hooper-Greenhill (2004:565), "a set of negotiated processes" rather than the "transmission'' of information according to preset formulae. This understanding of meaning making, while having a different emphasis from that of Gadamer, does not preclude his definition. As "a set of negotiated processes" (Hooper-Greenhill 2004:565), meaning making is not only in the hands of the viewer but also involves the author/s (curators, museum

directors and designers), the content, the media used, and the broader cultural environment, and, as different preferences are given to different relationships within the process, different outcomes occur. The type of engagement elicited by the museum exhibit forms part of this process and can be expected to affect the meaning made by the visitor, along with the other aspects mentioned above.

Making meaning and learning are closely related activities, if not one and the same thing. George Hein (1991:1) equates the two and states that, "constructing meaning is learning; there is no other kind". John Falk and Lynn Dierking (2000:76) state that a museum should strive to "engage people in educationally enjoyable experiences *from which they can take their own personal meaning*" (original emphasis). George Hein (2000:3) also closely links meaning making with learning when he discusses "the meaning that visitors make" in terms of the "increasing role of education" in museums. He further postulates that, with the increasing pressure on museums to justify their existence, they are taking cues from Disney enterprises and theme parks. He therefore not only relates meaning making and learning, but also meaning making and being entertained. In the quote above, Falk and Dierking (2000:76) also link meaning making, learning and entertainment (albeit in a less direct manner) when they use the phrase "educationally enjoyable" in relation to making "personal meaning". The links and tensions between learning and entertainment in the museum environment are further extrapolated after the meaning and consequence of learning has been more fully explored. The reason for looking more closely at learning is that it is an important part of the museum experience. As Falk and Dierking (2000:177) state, "learning is an outcome that is often expected both by people who visit them [museums] and people who design them".

Learning is not an easy subject within which to find principles that hold for most theorists and most types of learning. As Hein (2000:x) observes, "descriptions of how learning takes place are more likely than natural science to include schools of belief buttressed by their [learning theorists'] own selective view of the relevant supporting research". Hein (2000:14-40) goes

on to group learning theory into four main educational categories based on the theorists' epistemological views and their views on learning. His four categories are: didactic/expository; stimulus-response; discovery learning; and constructivism. He claims that all categories are beneficial in the museum environment provided that the museum is aware of the educational theory they support so as not to confuse viewers with contradictory approaches (Hein 2000:15). Interestingly, neither Maropeng nor Origins use a singular approach to learning. Maropeng uses all four of the approaches mentioned by Hein and Origins uses mostly a didactic/expository approach and a constructivist approach.

The didactic/expository approach, most often associated with modernist approaches, seeks to 'teach' the viewer principles that pertain to the 'real' world. This approach assumes that there is an objective reality and that knowledge of this reality can be taught by providing information in a sequentially structured way in small increments that build upon each other. The learner is relatively passive in this approach. A museum that uses this educational strategy can be termed modernist and is characterised by a sequential and hierarchical organisation of exhibits with a clear beginning and end, as well as an increasing complexity as the route is followed (Hein 2000:25-29).

The stimulus-response approach, according to Hein (2000:29-30), also uses an incremental approach but is underpinned by an epistemology that does not give credence to an objective reality. As such it is more concerned with the method of learning than it is with the content and is often used in training programmes rather than educational ones. As Hein (2000:29) acknowledges, it derives from early behaviourist theories. What he does not explain is that along with a stimulus and a response, reinforcement is needed for learning to occur. Reinforcement of a response to a stimulus can be positive, in terms of a reward, or negative, in terms of a punishment. Responses that are rewarded are repeated over time; those that are punished diminish over time (Engler 1995:206-208). This process of conditioning responses to stimuli does not require awareness and this type of learning cannot, therefore, be considered

to be related to meaning making, nor, for the same reason, can it be didactic and expository. What is learnt is a pattern of behaviour rather than understanding. Hein states that exhibitions that are structured along stimulus-response lines use the same didactic and expository means, as those used by museums with a didactic/expository approach. It is more reasonable, however, to expect that didactic/expository approaches may include stimulus-response elements rather than to equate two very different types of learning. Where museums offer stimulus-response type learning, exhibits reward the appropriate response "by providing a positive written or computer screen response ('Yes that's the right answer!') when a visitor pushes the correct button, lifts the appropriate flap, or arranges items in the correct order" (Hein 2000:29). The viewer, although active in terms of pushing buttons or lifting flaps, is passive in terms of creating meaning or understanding. A dog that responds to the command "sit" by sitting without understanding language is an example of this type of conditioning.

Discovery learning, according to Hein (2000:30-33), encompasses "any form of learning that attributes active participation to the learner". In discovery learning the emphasis shifts from the teacher to the learner. The learner learns through interacting with learning material rather than by absorbing information or being conditioned to change behaviour. The epistemology underlying this form of education is that the objective truth about the world is knowable if learners are exposed to the "phenomena of the world" (Hein 2000:31). An example of this would be that a child learns to pour water merely by being exposed to the phenomena of water and jugs and by being allowed to experiment with these. One of the shortcomings of this approach, particularly in the museum environment, is that learners may not pay attention to the phenomena to which they are exposed. Another is that they may not be able to determine which phenomena are relevant to the desired outcome without some 'pre-learning'. As Hein (2000:32) states, "often, to know what is relevant requires that the learner already has the knowledge that the situation is intending to impart". In the museum environment this approach is made evident by: a wide range of active learning modes, panels and labels that ask questions rather than give facts; the ability to go back and forth in exploring

exhibits; as well as school programmes and adult workshops that engage participants in activities designed to lead them to intended conclusions.

Hein is more inclined towards the constructivist approach, as are other theorists writing about learning in the museum such as Falk and Dierking (2000), Hooper-Greenhill (2004), and Roberts (1997). Although they may not specifically label themselves as constructivists, they all hold with the central principles of constructivist learning as extrapolated by Hein (1991). Essential to constructivist learning theory is the notion, on both an epistemological and learning theory level, that all meaning is socially and individually constructed. This does not necessarily imply that there is no reality 'out there' other than a construction, but rather that the only reality that can be known is a mediated reality. Reality is mediated through the cultural and personal lenses of social and personal experience. This distinction between 'experienced reality' and 'reality' is expressed by the philosopher Immanuel Kant (1724-1804) as phenomena and noumena. Phenomena are experiences of reality while noumena are 'the things themselves' independent of experience. No one can know 'the things themselves', for, as Roger Scruton (1997:477) states, "all our knowledge is of the empirical world". Constructivism as an educational approach concerns itself with experiences of reality and how meaning is constructed from these experiences. In the museum environment, the focus must thus be on the visitor who constructs meaning from the museum experience.

From the constructivist viewpoint, learning is an active process in which the learner engages with the world in order to construct meaning. The learner not only constructs meaning but also systems of meaning, thus the learner learns to learn. This view is supported by Donald Schön (1987:101-102) who, in describing a "Reflection-in-Action" approach to learning also mentions learning how to learn. He states that learning involves several kinds of learning, which are interwoven. These include learning to recognise and appreciate (in Schön's example the qualities of a design), to produce these qualities, and while learning (to design), learning how to learn.

From a different perspective, James Gee (2004:49-50) claims that good video games encourage reflection and that this is one of the reasons that people learn when playing video games. Like Schön, he also mentions learning to appreciate and uses the word mastery in much the same way that Schön talks about producing quality. He also states that,

> learning is a cycle of probing the world (doing something); reflecting in and on this action and, on this basis, forming a hypothesis; reprobing the world to test this hypothesis, and then accepting or rethinking the hypothesis (Schön 2004:107).

This statement concurs not only with Schön's idea of 'learning in action', but also with Gadamer's (2002:315) description of hermeneutical meaning making as "working out appropriate projections, anticipatory in nature, to be confirmed by 'the things' themselves". This quote was used previously in the discussion on engagement. It now serves to illustrate, in conjunction with Gee's cycle of "probing the world", the interwoven nature of meaning making and learning.

Hein (1999:6) states that the "crucial action of constructing meaning is mental". While this agrees with all that has been stated thus far in terms of meaning making from a learning point of view, this must exclude the stimulus-response approach because learners are not necessarily aware of being conditioned. Furthermore, as will be more fully extrapolated in the section on new media interactivity, some learning may indeed be physical. Hein (1999:6), states that "physical actions, hands-on experience may be necessary for learning, especially for children", but goes on to say that what Dewey (1859-1952) referred to as reflective activity absorbs the mind as well as the hands. In Hein's view, providing physical activity alone is not sufficient for learning to take place.

Other aspects of the constructivist approach to learning that are relevant to the museum experience are that learning is contextual, it is a social activity and it occurs over time. Another constructivist belief is that knowledge is needed to create new knowledge or understanding. What this means is that the learner responds to new information with already existing attitudes and understandings. In other words, new knowledge is coloured by prior

knowledge (Hein 2000:156). The cognitive psychologist Richard Mayer's (1992:228) description of a schema as something that "exists in memory" and that is a "framework for understanding information", illustrates a way in which previous learning may be a structure for supporting new learning.

Although Falk and Dierking (2000:136-143) subscribe to a 'contextual model of learning' rather than a constructivist approach, they nevertheless address all these points in their discourse on learning in the museum environment. They name three contexts that are important to learning. These are the personal context, the socio cultural context and the physical context. The personal context involves the learner's motivation, prior knowledge and the degree of choice and control open to the learner or museum visitor. The socio cultural context deals with both in-group (parents and children, friends) mediation and mediation through strangers (other visitors and museum staff). The physical context involves both the museum design and "reinforcing events and experiences outside the museum" (Falk & Dierking 2000:137).

The contextual model of learning (Falk & Dierking 2000), in contrast to most constructivist models, thus describes in greater detail the contextual elements involved in learning. The social aspect of learning is seen as a subcategory of context rather than as a point in its own right, and the building of knowledge upon previously learnt knowledge is implied by their term "prior learning" in the discussion of the personal context. As with constructivist models, Falk and Dierking (2000:11-13) also describe learning as something that happens over time. To all intents and purposes one can therefore consider the contextual approach to learning to be closely aligned to the constructivist approach

Museums that are guided by a constructivist approach focus on the visitor. They have more than one entry point and allow for different routes through the exhibition so that the visitor has choices and can therefore more easily build on prior knowledge and personal interest. The design of the museum helps visitors orientate themselves in what is often a complex space so that they can enjoy and pay attention to the exhibits, which often offer opportunities for them to see things in novel ways. Finally, they provide access for continued

exploration and learning over time via, for example, the cell phone and the Internet.

In returning to the relationship between learning and entertainment in the museum environment, Lisa Roberts' (1997:13, 42) phrase "scholarship versus popularization" serves to point to the opposition between serious education endeavours and the "less-than-noble pursuit of entertainment". Historically, museums have positioned themselves at various points between the two poles in response to societal attitudes and political and economic considerations.

Education was already associated with early private European museums of the fifteenth and sixteenth centuries in that scholars were invited to view collections in private homes or palaces. It is reasonable to assume that, together with the intellectual exchanges, social exchanges also took place, thus providing a measure of entertainment along with an educative function (Figure 8).

Figure 8: Johann Zoffany, *The Tribuna of Uffizi*, 1772-7.
The Royal Collection, Her Majesty Queen Elizabeth II, Edinburgh.
(*Designing Ways* 2009 108:43)

Nineteenth century museums veered more towards an educative function as they became open to a broader public, thus allowing for the then desired

educating of the ‘masses’. At the same time, the spread of national and international expositions was a threat to museums as they provided a mix of ‘scientific knowledge’ and entertainment that attracted larger crowds than museums did. According to Paul Greenhalgh (2000:76), who uses Britain as his example, expositions were effective largely because they were “massive, virtually unprecedented displays in buildings specifically designed to take your breath away with their size and opulence”. Museum buildings, in contrast, were more stately and temple-like. Furthermore, museums offered limited entertainment, if any at all; it was felt that this would harm their credibility as protectors and purveyors of culture. Even though national and international expositions did offer entertainment, the British commercial and political organisers of these expositions were not entirely comfortable with this. Greenhalgh (2000:82) notes that “resolutely and consistently, education and entertainment were understood to be not the same thing” and that commentators “were noticeably disturbed by evidence that the masses were taking hold of occasions and transforming them into holidays”. By 1908, although entertainment continued to be offered at expositions, official literature dealing with the expositions did not mention it. Greenhalgh (2000:85) illustrates this ambivalence towards entertainment as follows: “The ‘Wiggle-woggle’, ‘Flip-flap’ (Figure 9) and ‘Witching-waves’ might be vital money-spinners, but for decency’s sake they had to be consigned to historical oblivion”.

Figure 9: Postcard of the *Flip Flap at the Japan-English Exhibition,* 1908. (flickr.com).

Greenhalgh (2000:82-95), in building up to the point that French museums had more impact on society than did British museums, goes on to compare French and English exhibitions from the viewpoint that it was not the conflict between commerce and education that made English exhibitions less successful than French exhibitions, but the conflict between education and entertainment. In contrast to the British, the French

> understood by 1878 that success in the widest sense demanded the creation of facilities that the crowds could take pleasure in. All other motives, including educational ones, became integrated into this initial premise … Ultimately the overriding feeling of the French Expositions was of festival, and a rather earthy, raucous one at that (Greenhalgh 2000:93).

This attitude to entertainment also allowed the French museums to attract more visitors than their British counterparts. Greenhalgh (2000:97) illustrates this point by comparing the opening of a Dali exhibition at the Centre Georges Pompidou in 1980, and at the Tate Gallery directly thereafter. The French suspended a giant (twenty metre long) teaspoon with a Volkswagen in the ladle and erected a mountain that had to be climbed in order to see some of the works. Music was played and a cinema upstairs from the exhibition

showed some of Dali's films. On the night of the opening, striking[6] museum staff showered visitors with small pieces of paper that had the word strike written on them. This combination of politics, entertainment and art exhibition was thought entirely appropriate by the French, and people queued for days to see the exhibition. The British exhibition had none of these sideshows and was decidedly more sober, but also much less popular than its French counterpart. As Greenhalgh (2000:97) states, "The British organisers actually denied their audience the chance to learn about Surrealism in the best possible way, that is, by experiencing a surreal environment".

In American museums the two opposite poles were similar to those in Britain, the one being popular, the other serious education and moral upliftment. Popular was not only seen as entertainment but also as education on a lower level, and serious education was often understood as providing only for the elite. Thus, early American museums were seen as being either "amateuristic sideshows devoted to popular entertainment" or, as "elitist enclaves", depending on the viewpoint of the historian (Roberts 1997:21-22). In the case of George Brown Goode, both opinions were expressed in the same speech to the American Historical Association in 1888 indicating his (and a generally felt) ambivalence as to the desired role of the museum. A third stance evolved largely as a result of research on the museum visitor. This stance held that both leisure and education were important functions of the museum. An article in *Museum News* in 1962 entitled 'Leisure Time and the Museum' compared museum going to activities such as baseball and bowling. This article created a furore at the time and museum educators, directors and curators still tend to be suspicious of placing too much emphasis on entertainment, although restaurants and bookshops or even curio shops are now evident at almost every museum (Roberts 1997:15-45). The role of learning versus entertainment thus remains an area of ambivalence.

[6] The museum staff had gone on strike for better pay and working conditions (Greenhalgh 2000:97).

As quoted previously, Hudson (2004:87) cautioned against inventing “an imaginary phenomenon called the museum”, and this chapter has provided justification for this point of view in that many different forms of museums have been described playing varying roles in society. There are, however, generalisations that can be made. One of these is that a museum is a space that people visit to gain edification and to be entertained. This could also be said for the great national and international expositions of the late nineteenth century as well as current theme parks of the Disney variety. In which way then, do museums differ from these expositions and other trade fairs? As mentioned before it is the ‘authentic’ educational experience that differentiates museums from other forms of leisure activity. This does not, however, preclude the museum from providing entertainment as well. As the comparison of the Dali exhibition in Paris with the Dali exhibition in London made clear, entertainment can enhance the communication process and enrich the learning experience.

Another useful generalisation is that museums are collections of “knowledges” (Keen 2004:1) that are bound up with research. These “knowledges” can be displayed as artefacts, with or without supporting text, as video presentations or even as virtual environments. Most postmodern museums use a variety of communication strategies. It is, however, the quality of research that informs these knowledges, and that is generated from them, which is important in providing for an ‘authentic’ education experience. If the research is superficial, the experience may become trivial. This is not to say that communication strategies are not important; for, without good strategies the visitor is left uninterested or unaware. Equally, engaging the visitor by employing good communication strategies, but having nothing of import to communicate is also unsatisfactory. It has to be borne in mind, however, that the visitor also plays a role in the making of meaning and thus engaging the visitor is of prime importance. New media has a unique, but as yet under utilised, ability to engage the visitor and to provide a meaningful learning experience. The next chapter explores the phenomena of new media, the effect this media has on human experience in the museum realm and the potential it has for enhancing the museum experience.

CHAPTER THREE
NEW MEDIA IN THE MUSEUM ENVIRONMENT

3.1 Introduction

The exploration of new media provokes discussions about interactivity and how people interact with media and technology in terms of engagement and meaning making. These characteristics are important in a museum environment if both learning and entertainment (currently considered to be equally important) are to be offered to visitors. Furthermore, the diversity of visitors in terms of age, class, ethnic groups, education, previous experiences etc. needs to be considered if the media chosen for display is to provide both learning and entertainment.

This chapter explores new media beyond the viewpoint that new is the result of old media becoming computerised. It does not, however, contest this notion entirely as the following discussion demonstrates. The chapter concentrates on video games, virtual reality and new media art in order to extract the qualities and characteristics of new media, particularly those useful in a museum environment. Finally, the chapter considers the visitors' experience of new media and those elements that could render new media a useful experience in the museum.

3.2 What constitutes new media?

In order to evaluate the contribution of new media in enhancing the visitor experience in the museum environment, a thorough understanding of what constitutes new media is necessary. This is particularly important in view of the argument (put forward by this study) that new media's potential has not been fully utilised in the South African museum environment. The museums under discussion, namely Maropeng and Origins, are two examples of this. Maropeng makes little use of new media while Origins makes more use of it than Maropeng but does not seem to use it to full potential. As is illustrated at a later stage, these museums could enhance both the learning and

entertainment experiences of the visitor through a more extensive use of new media.

The term ‘new media’, although used since the 1960s, gained currency in the 1990s when it replaced older terms such as multi media and cyberspace (Chun 2006:1-3). The term ‘new media’ is a plural noun but is used in the singular. The use of the word media to denote a singular medium occurred in the nineteenth and early twentieth centuries to describe cheap newspapers and magazines. The media now thought of as being ‘new’ is generally considered to be digital but, according to Wendy Chun (2006:1), excludes digitised forms of other media such as photography, video and text. Manovich (2001:19-29), on the other hand, allows within his definition of new media, old media that has become digitised, that is created, stored and distributed in a numerical form. From his definition it is not clear whether the digitising of analogue media through for example scanning, can be regarded as new media or not. This study positions itself between the views of Chun and Manovich and proposes the view that new media includes digital photography, video and text provided that these have been created by a digital medium and not simply converted from analogue or print media. In terms of this definition, new media includes media such as the web, computer games, DVDs and virtual reality.

New media is described by Manovich (2001:25) as the convergence of the computer with media. By reducing media such as images, texts and sound to numerical data, “media becomes new media” (Manovich 2001:25). Jay Bolter and Diane Gromala (2003:19) support Manovich’s view when they state, “the graphics and sound capabilities of the Macintosh were key to convincing us that the computer was a medium”. The question is why digital media, or the computer as a medium, should be considered to be new in relation to other media. Chun (2006:2) states that “all media were once considered to be new media”, but this does not explain why new media continues to be named and understood as *new media.* Chun (2006:3) puts forward the view that new media was named new media by other media such as novels, television and advertisements as a result of political attempts to deregulate the Internet in

1995. Prior to this, even though the Internet had been invented, and many Americans had at least heard of, if not used it, new media was not considered new.

Thomas Elsaesser (2006:13) questions whether the digital image is new as in not existing before, or new as in being different from previous practices of imaging and thus "the logical technological continuation of a long and complex history of mechanical imaging". He quotes film director George Lucas (2006:13) who states that "digital is like saying: are you going to use a Panavision or an Arriflex [camera]? Are you going to write with a pen or on your little laptop? I mean, it doesn't change anything" (Elsaesser 2006:13). This quote implies that whatever is new about new media is inconsequential; as Lucas (2006:13) states that "it doesn't change anything". Interestingly, Elsaesser uses the term 'multi-media' rather than new media, perhaps suggesting hesitancy in believing new media to be new.

In contrast to Lucas's view, Elsaesser (2006:13) proposes the idea that what distinguishes digital media from analogue film is the "loss of the indexical link with the real". This break from grounding moving images in familiar time space contexts, he feels, may result in the move away from the expression of narrative that people currently expect from cinema. This is an important point of view if considered in conjunction with the museum. If new media results in a loss of the indexical link with the real, this suggests that new media has no value for museums. This is because museums, by their very nature, display objects or knowledges that are related to real time and space. However, as was illustrated in the description of *Place-Hampi* (see 2.6), new media is useful when the subject matter to be 'displayed' includes ancient mythology. Also in this case, the environment being displayed (three dimensional views of Hampi) does have an indexical link to Hampi (an existing place), as the visuals and sounds were recorded there. Evidently, while new media has the potential to sever the link to the real this is not an automatic consequence of an image being digital.

What many new media theorists do consider to be new about new media, is that it has changed the ways in which people make meaning of their interactions with the world in that it enhances interactivity (Bolter & Gromala 2003; Hansen 2004; Hayles 2002; Manovich 2001). However, in discussing the interactive nature of new media, Manovich (2001:55) specifically addresses the "Myth of Interactivity". Contrary to first impressions, Manovich (2001:57) is not saying that new media is not interactive, but rather that the "concept is too broad to be truly useful" in distinguishing new media from other media. He particularly does not want the term 'interactivity' to be interpreted literally as mere physical interaction thereby losing psychological processes such as hypothesis formation and identification (Manovich 2001:55-57).

Both Bill Nichols (2003:625-641) and Mark Hansen (2004:1-18), in contrast to Manovich, feel that it is precisely the physical nature of interacting with new media that enhances the experience of interactivity. The physical behaviour of the reader/participant is regarded as primary in distinguishing the differences in meaning making processes between old and new media (Hansen 2004; Hayles 2002). This view holds that looking at and contemplating, for example, an artwork or artefact does not provide the same type of interactivity as does waving one's arms, or touching screens to change the display, or scrolling with a mouse.

This stance can be better understood in the light of one of Gardner's[1] seven intelligences, namely the *Bodily-Kinaesthetic Intelligence* (Brualdi 1996:2). According to Brualdi (1996:2), the existence of this intelligence questions the "popular belief that mental and physical activity are unrelated". Thus, meaning (a mental activity) can be made through physical activity.

Although Nichols (2003:625-641) supports the point of view that it is the physicality of new media interaction that enhances the experience, he does

[1] Howard Gardner (2006:8-17) claims that intelligence, which is situated in the biology and psychology of human beings, is the ability to process information and solve problems. He has listed seven intelligences, which are: musical; bodily-kinaesthetic; logical-mathematical; linguistic; spatial; interpersonal; and intrapersonal.

draw a distinction between new media interactivity and social interaction between people. Nichols (2003:632) states that the experience of social interaction, via new media, is not true interactivity but a simulation because those who are interacting socially through new media are positioned "squarely within the realm of communication and exchange *cleanly evacuated of the intersubjective complexities of direct encounter"* (emphasis added).

Figure 10:Toni Dove, *Artificial Changelings*, 1993-8.
(Reiser & Zapp 2004). [DVD-Rom]

An example of this form of simulated communication is the new media artwork *Artificial Changelings* (Figure 10) (Dove 1993-8) where the viewer interacts with a character on screen rather than with a person. The artwork consists of four spatial domains, and as the viewer moves backwards and forwards the sequence of the narrative changes, moving through time zones, dream and real states and altering relationships with the character. Zone one is closest to the screen and the viewer is, as it were, inside the character's head. In zone two, the viewer directly confronts the character. Zone three is a dream state and zone four a time tunnel. Movement by the viewer also generates either speech in the character, or a change in emotional tone or movement by the character.

In this and other new media expressions, viewers are aware that there is some correlation between their behaviour and that of the characters but cannot determine the exact nature of their influence. The viewer has agency, but the interface is not apparent (there is no visible, tactile joystick or mouse to manipulate) and this allows for greater immersion and identification. Even when the interface is apparent, for example the mouse in computer games, the exact relationship to the development of the game is not, and therefore

much of the holding power of computer games also revolves around agency, which is not completely transparent.

Another characteristic of new media interactivity, as described by Douglas and Hargadon (2004:192-205), is the emotional pleasure that the media gives rise to, which is why people remain engaged for long periods of time. Douglas and Hargadon (2004:198) state “our pleasure stems from our ability to recognize a single schema and the several scripts it offers us for both interpretation and directed action”. A schema “exists in memory” and is a “framework for understanding information”, according to cognitive psychologist Richard Mayer (1992:228). Torben Grodal (2003:129), in discussing the immersive power of video games, also uses cognitive psychology as a framework for understanding the relationship between interactivity and engagement. He states that “cognitive psychology provides many advantages as a tool for describing video games” and that “some types of virtual reality are the supreme media for the full simulation of our basic first person story” experience because they allow “the full experiential flow” (Grodal 2003:129) by linking perceptions, cognitions and emotions with first person actions. It is Grodal’s view that it is the video game’s ability to simulate real life experience that engages the viewer more fully than does a written narrative.

New media’s ability to immerse the viewer and to simulate reality, engaging the viewer physically, cognitively and emotionally can certainly provide an engaging and entertaining experience for the museum visitor. The question is, will it provide a suitable learning experience? Will the authenticity of knowledge gained from observing real artefacts supported by well researched text be compromised? In some instances this will be the case. The authenticity of an artefact, an ancient Greek vase for example, cannot be communicated through a digital image without the loss of awe. As Benjamin (2001:50), states “the presence of the original is a prerequisite for authenticity”. However, in the given example, the ancient Greek vase is now in a museum and consequently divorced from its original use in ancient Greek culture. It is dislocated in both space and time from its original setting, which

means that the museum visitor relates to it in a different way from its original user, owner or maker. Supporting text gives the visitor further information related to the vase and can fill in such details as the period, use, potter or artist, but visitors still have to use their imagination to create a whole picture.

Imagination is made available to individual visitors from their own past learning, experience and learning style, and therefore would necessarily differ from person to person. The corollary of this statement is that different exhibition styles or mediums, will also lead to different meanings constructed by the visitor. In some instances therefore, new media can be superior to displaying artefacts as a method of communicating knowledge. For example, in a museum such as Origins, the use of new media to create an understanding of the metaphysical beliefs of the San might engage the viewer more fully and be more comprehensible to visitors uninformed concerning ritual dances and trances than would a collection of San artefacts. If the image of the trance dance were to surround the viewer and change in response to the viewer's movements, as has been achieved by Toni Dove in *The Changelings* (1993) discussed earlier, the viewer might indeed feel immersed in the dance rather than being a distanced onlooker.

The discussion on new media thus far has focussed on the aspects of human nature (affective, cognitive and physical), which are called into play when interacting with new media and which therefore allow for a new way of making meaning. Another aspect of new media is that it is the *structure* of the media itself that is the reason for the changing nature of meaning making. This view holds that digital media, by their very nature, *structure information* differently from analogue or printed media, resulting in a different kind of interaction with the content. For example, Stuart Moulthrop (2003:694) states that hypertext, "because it is no longer book-bounded, … may be modified at will as readers/writers forge new links within and amongst documents". This serves to illustrate how new media interactivity has caused a shift away from the linear, sequential structuring that is the legacy of print as a medium towards a more open ended or 'rhyzomatic' (Deleuze 2005:3-25) structure. Digital media thus allows the reader more control in navigating through information and in

influencing the form of the text (used in the broad semiotic sense to include objects and visual material). This ability to give form to the text in a museum environment is important both for the engagement of the visitor and for learning to take place. As discussed previously, learning is an active form of engagement in which learners form meaning in relation to their interests, previous learning and the current context.

New media has affected contemporary cultural viewpoints and practices. Likewise, contemporary viewpoints and practices have influenced the ways in which new media is used for entertainment and learning. This symbiotic relationship and its potential for museum exhibition can be better understood by looking more closely at different forms of new media and how they mediate reality for the user or observer. Three new media forms, being widely different in nature, offer breadth and depth in the understanding of the possibilities inherent in new media for enhancing the museum experience.

The first of these is the video game, the second is new media fine art, and the third is virtual reality. The video game is used for analysis because it is already used in museums, most notably Origins, which is under discussion. Video games and their value in enabling learning are by now fairly well documented, although not uncontested. This forms much of the discussion of video games in relation to museum learning undertaken by this study.

New media fine art is important to discuss in that fine art, like museums is not usually funded solely by commerce. Museums (broadly put) are concerned with preserving cultural heritage and communicating this culture in a meaningful way to visitors. Fine art (also broadly put) is concerned with communicating (contemporary) cultural issues to an audience in a meaningful way. This parallel concern with communicating cultural ‘truth’ (mediated and constructed by society and the individual as it is) is something both institutions have in common. Thus, studying new media from a fine art point of view could possibly provide insight into the use of new media in a museum environment. Another reason for investigating new media from a fine art point of view, is that, as Bolter and Gromala (2003:24) state, artists can afford to be more

experimental because they do not need to satisfy clients and thus can extend the parameters of new media. The statements by Bolter and Gromala (2003:24) could be perceived as oversimplifying the relationship between fine artists and their audience. Nevertheless, a fine artist does have more freedom for self expression than does, for example, a video game designer working in a commercial corporate company. This freedom for self expression does allow for more experimentation and this in turn promotes the use of new technology and modes of communication in the field of new media.

Virtual reality as a medium and as a concept has aroused much interest, which has resulted in various theoretical viewpoints from philosophical, cultural or technological stances. Jean Baudrillard (1994), Mark Poster (1995), Sherry Turkle (1995), Mark Hansen (2004) and Brian Massumi (2002) are examples of theorists who concern themselves with aspects of and issues related to virtual reality. Both the possibilities spawned by virtual reality technology and the attendant cultural and philosophical issues make a more detailed exploration worthwhile as a precursor to the value of virtual reality in the museum.

3.3 Video games

The terms *video games* and *computer games* are often used interchangeably but strictly speaking they are not the same thing. A video game requires visual action on a screen, while computer games can use only text, although many do use visuals. In agreement with Wolf and Perron (2003:2), this study uses the term video games to refer to all games that have an electronic component and visual activity on a screen. The term video was originally used to refer to only arcade games and home video games but now also includes computer games and handheld games with pixel displays (Wolf & Perron 2003:14-21).

All games, be they electronic, physical or board games, have certain elements in common. These are: *conflict* between one player and another, or between the player and the game itself; *rules*, which dictate what a player is allowed or not allowed to do; *player skills* or abilities, such as quick responses or the

ability to strategise; and a *valued outcome* such as beating an opponent or achieving the highest score (Wolf 2001:14).

Video games have these same elements except that the computer, rather than a human being such as a referee, controls the rules of a video game and is also in some instances the opponent in the game. The most important quality that is generally accepted as being essential to video games is "that game action appears in some visual form on screen" (Wolf & Perron 2003:14).

According to Wolf and Perron (2003:14-15), the video game is a unique medium in that it consists of four elements, the combination of which is not seen in other game media. The first element is a basic set of rules to be followed in calculations or problem solving, most especially by computer. This basic set of rules governs how the game responds to player activity. The second element, player activity, is common to all games, except that in video games, player activity is actualised through an interface (the third element) and is to some extent physical. For example the player might press keys on a keyboard (interface), or manipulate a joystick (interface) in order to interact with the game. An interface is a point where two systems or organisations meet and interact. In the case of video games this interaction is not only the interface between the player and the video game, but also between the hardware, software and the game itself. The fourth element is graphics, which in video games refers to the pixel based images on a screen that change and can be altered under player control (Wolf & Perron 2003:14-15).

The computer behaves in response to the programmer's algorithms as well as in response to the player. This might suggest that the player is playing against the programmer. While this is true to some extent, the computer's ability to store and compute information with great speed renders it a more formidable opponent than the programmer. For example, "super-computer chess games like IBM's *Deep Blue* and *Deep Thought* can certainly beat any programmer in chess" (Wolf 2001:15). Nevertheless, as Sherry Turkle (2005:67) states, "at the heart of the computer culture is the idea of constructed, 'rule governed' worlds". These rules are gradually discovered or understood through the

practice of playing and this contributes to the holding power that video games have. As Turkle (2005:67) states, “computer culture is a culture of rules and simulation”. It is this ‘holding power’ that makes the medium so attractive as a tool for learning, both from the learner’s and from the teacher’s point of view. The learner is enjoying the game, while being immersed for a long period of time. The teacher, through the medium of the game, has the learner’s attention fixed on the learning material.

Edutainment, as it pertains to video games, has developed a reputation for being superficial partly because the games were designed by educators who knew little about game design and technology or because current pedagogical theory did not inform the design of the games (Holland, Jenkins & Squire 2003:44). The best games respond to the player’s level of expertise so that they challenge both the novice and the proficient player, forcing them to stretch themselves to the furthest limits of their mastery. The underlying concept behind this capability of the game is that there are different levels in the structure of the game and the player cannot proceed to the next level until mastery has been achieved at the current level. Achieving mastery involves “rehearsing alternative approaches [and] working through complex challenges” (Holland, Jenkins & Squire 2003:28) as the player has to compromise between limits in space, time and resources.

Games can accommodate different learning styles[2] in that they involve cognitive, affective, kinaesthetic, audio and visual modalities. This is particularly desirable in a museum environment where visitors include a wide range of people who learn in a preferred way. Holland, Jenkins and Squire (2003:28) also state that motivation is likely to remain high when knowledge is a tool for winning a game rather than an end in itself. This is not likely to be true for the museum environment as visitors are expecting to learn something, as well as being entertained. Furthermore, in trying to hide the ordering of

[2] David Ayersman and Avril von Minden (1995) state that Kolb (1985), one amongst other theorists who discuss learning styles, identifies four learning styles. These are: Diverger; Converger; Assimilator and Accommodator. Furthermore it can be deduced from Gardner’s (2006) multiple intelligence theory that methods that respond to the learner’s dominant intelligence are more likely to be effective in terms of learning.

information within a story or a game, the game runs the risk of being trite and thereby losing the advantage of engaging the player (Velleman & Moore 1996:223).

This was one of the problems that the Games-to-Teach project aimed to overcome. Holland, Jenkins and Squire (2003:27) describe the Games-to-Teach project as "a collaboration between MIT Comparative Media Studies Program and Microsoft Research". The project was aimed at advanced secondary or early undergraduate level that, according to Holland, Jenkins and Squire (2003:27) is the age group that dominates the game market. The project sought to provide educational material for maths and those sciences that would both capture their audiences and be a useful tool for teaching. The project involved the design of three games: *Hephaestus, Supercharged* and *Biohazard* (1989).

The first of these, *Hephaestus*, is a game where players design robots and then use them to colonise a fictitious planet. Because the game is a massively multiplayer game, players can compete against and/or collaborate with other real time players anywhere in the world via the Internet. A crucial part of game playing involves the discussion between game players (person to person or via the Internet) as to effective strategies and discoveries enabling mastery of the game. These peer to peer communications are considered to be very important interactions from a pedagogical viewpoint in that these interactions are nonthreatening and offer opportunities for learning how to learn. Players thus learn not only scientific and engineering principles inherent in learning to play the game, but also social interaction skills (Holland, Jenkins & Squire 2003:29-33).

Supercharged, their second game, is designed to help students visualise abstract scientific principles that are not part of their real life experiences. The player inhabits a small metallic space pod (on screen) that has the characteristics of a charged electromagnetic particle. The pod is navigated by placing charged electromagnetic particles throughout the environment. The player learns to intuit how "charged particles interact with electric and

magnetic fields" (Holland, Jenkins & Squire 2003:36). The game requires the player to make decisions based on observation and then note the results of decisions taken in an ongoing cycle throughout the game. The game thus mirrors "the 'scientific method' of constantly revising hypotheses through experimentation" (Holland, Jenkins & Squire 2003:37).

Biohazard, the third game design of the Games-to-Teach project, makes use of the narrative capabilities of video games, the representation of evocative spaces, and the emotional reaction of characters in the game to provide a heightened emotional experience. This makes the knowledge gained while playing the game more memorable than knowledge gained without emotion. The game also uses the pedagogical principle of learning by doing. For example, the player hears a child coughing continuously, checks which procedure to perform in an online manual and then sees herself perform the procedure (Holland, Jenkins & Squire 2003:37-39).

As can be seen from the above examples, video games can provide a wide range of learning experiences. This does not, however, mean that they are suitable for a museum environment. The three games described above were designed to be played in a classroom environment where students could spend as much time as they wished playing the game. Also, they could return to the game repeatedly so that practice was also part of the learning experience. In the museum environment visitors expect to move from exhibit to exhibit and this means that they cannot spend hours at one exhibit playing a video game.

The following example, as described by Robin Baker (1991), illustrates a video game created for the Design Museum in London (1989) that fulfils the requirement of being able to be played in a short period of time. The game aims to teach youngsters between the ages of seven and sixteen to understand the process of design by taking the design of a toothbrush through the various stages of the design process. As they proceed through the game, an icon in the upper right hand corner of the game indicates how their budget is being depleted by the cost of design time, the choice of materials and

manufacturing method, and so forth. The game was designed to make interactivity inherent by using a touch screen as an interface. Pointing and touching are more direct ways of interacting than, for example, a keyboard that would require the user to look away from what was happening on the screen. The game was also designed to make references to arcade video game culture. Presumably this was to attract the target age group as well as to make the strategies of playing more familiar to this age group. The question is, what makes this game at home in a museum rather than a video game arcade? By making references to arcade games is the museum not providing mixed messages that will ultimately confuse visitors? Firstly, it must be noted that the museum does not exclusively use video games to exhibit design. There are also exhibits of models, sketches, mass produced designed objects, materials and information on production methods. The video game is only a part of a much larger display, but nevertheless explains a very important aspect of design, which is the process by which it is achieved. Secondly it is the content of the game that makes it more suitable for a museum than for a video game arcade.

What needs to be noted from the discussion of video games thus far is that they are suitable vehicles for both entertainment and learning when they are well conceived and designed. They have the advantage over other media in that they can simulate experiences or events and can make abstract ideas concrete. The nature of interactivity offered by the computer provides the user with a choice in sequence, navigation paths and depth of information. This choice is pedagogically important as it engages the visitor and allows for different levels of knowledge and for varying learning styles. However, despite the technological advantages of computers and videodisks, video games need to be designed using pedagogical principles and with meaningful content if they are to be elevated above arcade status and be useful in the museum environment.

3.4 New media fine art

Jeffrey Shaw is a new media artist and many of his art installations explore, among other things, virtual space on a technological as well as a philosophical level. He is an example of an artist whose technological and conceptual exploration has proved fruitful for other areas of communication such as, for example, museum exhibition. His work supports the previously mentioned point that artists can afford to be more experimental because they are not necessarily working for specific clients and thus can extend the parameters of new media (Bolter & Gromala 2003:24).

Jeffrey Shaw's *ConFiguring the Cave* (1997) is a digital installation consisting of projections onto three walls and the floor (Figure 11). An almost life size mannequin, similar to those used to teach drawing and proportion, is fitted with sensors that change the imagery and sound according to the mannequin's position. The mannequin is the interface between viewer and artwork and, as it is swivelled through space, the moving imagery shifts as though seen from the mannequin's perspective. The imagery and sound floating in the space around the mannequin and the viewer is perceived directly by the viewer but also indirectly as the viewer identifies with the mannequin. From both perspectives a dizzying effect is created that the viewer feels through proprioception, auditory and visual sensations.

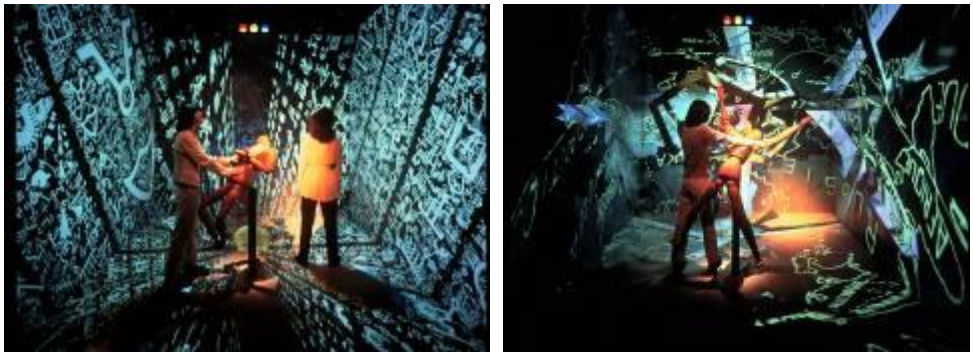

Figure 11: Jeffrey Shaw, *ConFiguring the Cave*, 1997. One still from each of the seven domains.
(Reiser & Zapp 2004). [DVD Rom]

Using CAVE™ (Computer Automated Virtual Environment) technology, Shaw has divided the artwork into seven domains. Each time the mannequin's hands are placed over her eyes and then removed the artwork shifts to another domain. Although each domain is different - one for example consists largely of text and pictographic symbols, while another is clearly a reference to Plato's Cave allegory and yet another explores representations of space as cubes floating by with illustrations of interior perspectives on their sides - they all have a surreal quality to them. Floating domestic objects, texts, illustrations

of hands signing, parts of the world map and so forth, are layered into filigreed planes or float as objects in deep space, depending on the viewer's manipulation of the mannequin. Söke Dinkla (2004:29) quotes Eberhard (a writer on aesthetics) as saying, "I feel as if I were entangled in a contradictory dream world". This is an accurate description of the effect on the viewer of *ConFiguring the Cave,* although it actually referred to the panorama (a semicircular screen) as a means of display.

This immersion in a dreamlike or virtual world is made possible by placing the viewer within the moving image. This in turn is achieved by extending cinematic techniques such as a darkened space and the use of a large screen, which looses its framing effect into Cave™ technology. This technology creates ambiguity as to the boundaries between floor and wall and allows for space to be easily distorted. Interactivity also aids this sense of immersion as the surrounding changes appear to be the result of the viewer's own movement. In this artwork, the viewer becomes a cameraman, manipulating the mannequin to pan and zoom. Viewers also identify with the mannequin; thus, on both an unconscious and conscious level viewers appear to be creating their own reality. The exact nature of the viewer's creative control is not clear to the viewer as the correspondence between the mannequin's position and imagery shown is not known to the viewer, nor is the exact relationship between imagery and meaning. It is clear that much of the visual and auditory communication makes cultural references and the viewer no doubt supplies many inferences not originally intended by Shaw. However, it is precisely this indeterminacy that gives the artwork its potency.

Indeterminacy is not a quality that is usually thought of as useful in a museum environment. Visitors expect to learn something and not to be left doubtful about what content is actually being communicated. Cave™ technology can nevertheless be useful for creating immersive environments without the degree of ambiguity in Shaw's *ConFiguring the Cave,* as has been demonstrated by *Place-Hampi* (see 2.6). Furthermore, computer generated imagery and sound allow for abstract concepts to gain form and for the visitor

to be immersed in situations that are not realistically possible, for example being a baby in a womb. Shaw tends to make the interface obvious in his artwork for example, the bicycle in *Legible City* (1988-1991) and the mannequin in *ConFiguring the Cave.* Based on these two examples interesting interfaces themselves have value in a museum as they have the potential to increase the entertainment value of the exhibition and no doubt the learning experience as well.

Toni Dove, on the other hand, makes use of invisible interfaces and her artworks appear to respond naturally to the viewer's movements. In the previously mentioned artwork *Artificial Changelings* (1993-8) (Figure 12) the artistic medium is more obviously cinematic narrative than is that of *ConFiguring the Cave*. The work contains two characters, Arathusa, a nineteenth century kleptomaniac and Zilith, a futuristic encryption hacker. Arathusa is portrayed as a disempowered woman who sublimates her sexual desire through kleptomania and erotic dreams. The narrator tells us that the "department store had become her lover" and that "in secret she sliced through the surface of her skin and watched the blood flow through the tiny openings. At night she had dreams rich with passion and vengeance" (Reiser & Zap 2004). Zillith, on the other hand, while active in her SciFi world has no interior life.

Figure 12: Toni Dove, *Artificial Changelings*, 1993-8. Six stills from the installation, the left three relating to Arathusa and the right three to Zillith. (Reiser & Zap 2004). [DVD Rom]

The viewer must move through the dream state zone in order to switch from Arathusa to Zillith and vice versa. “The viewer is left with a broken sense of communication that continually returns” says Dove (2004:213). As in *Configuring the Cave* the viewer has agency, but in this case the interface is less apparent (there is no visible, tactile, mannequin) and allows for greater immersion and as a result, according to Dove (2004:231), often ends up mirroring the characters (Arathusa and Zillith) in an empathetic way.

Dove’s content is easier to access than that of Shaw in that her characters and settings refer to specific cinematic genres and time frames and her psychoanalytic references are more apparent. This transparency of content is more suitable for the museum environment than Shaw’s imagery which seems to be filtered through personal experience. Both however, rely on techniques that encourage the making of meaning in an embodied way, using interrelated senses, affect,[3] conscious and unconscious thought. Both works create a heightened sense of reality through immersion and this is of value for museum exhibition.

3.5 Virtual Reality

As noted previously, Marie-Laure Ryan (2001:12) sees virtual reality as dependant on computer technology and as imaginary. In other words, the computer is so programmed that, by interacting with it, people imagine

[3] The term *affect* is used in Hansen’s (2004:7) sense of the word meaning “the body’s ability to use its sensorimotor power to experience itself (the body) as greater than itself”.

themselves to be interacting in the real world. According to Grau (1999:26-27), this perception of interacting in a real world becomes correspondingly more convincing the more involved the person is. He states, “psychobiological tests show that the more the participants are involved, the less they are able to differentiate between the artificial world and personal experience” (Grau 1999:38). Virtual reality represents the search for this state of immersion where the artificial seems real. This artificial environment can be a simulation of the real world or be a fantasy world, provided that the participants imagine that they have real agency in this ‘virtual’ environment. Pilots use a simulated environment to practise their flying skills because the ‘virtual’ flying experience corresponds with an actual flying experience in terms of what can be perceived via the senses and acted upon via mental and physical engagement in real time. This is a simulation of the ‘real’ world. A fantasy world can be perceived as ‘real’ when the participant fully identifies with a character or avatar moving within or through a credible space and can manipulate objects in this space through some physical movement in real time. In some instances participants see the ‘virtual’ or fantasy environment as though through their own eyes (Figure 13). In such cases the perspective is then even more credible.

Figure 13: First person perspective in a virtual reality game. (thenerdsignal.com).

Early virtual reality enthusiasts (computer subculture magazines such as

Wired, Virtual and *Mondo 2000* were euphoric in their reactions) believed that virtual reality could challenge reality in terms of credibility, and could also provide a broader range of, and a more profound experience than that offered by the actual world. A history of the visual arts shows that there have been various periods and movements aiming at the illusion of reality with the intention of immersing the viewer into the centre of the painting/plot/narrative and thereby offering a more potent experience than that offered by the unmediated perception of the world. Grau (2003) develops this theory in terms of the pictorial arts in *Virtual art: From illusion to immersion.* He sees the development of perspective in the pictorial arts as the desire of the artist to create an illusion that lures the viewer into the painting in much the same way that virtual reality artists desire to place the viewer in the centre of the virtual environment. For virtual reality to be seen as 'real' then, the same suspension of disbelief is required as that of other media such as the pictorial arts or film.

According to Grau (2003:169), the term *virtual reality* was coined by Jaron Lanier in 1989, although the first computer aided head mounted display (HMD) was designed by Ivan Sutherland in 1968 and funded by the US military budget. The HDM responded to the user's head movements by displaying different three dimensional computer generated images (Figure 13). With hindsight, this can be regarded as the first instance of virtual reality. The impression created was one of being responsible for generating the changing views. Since then, HDMs have become increasingly sophisticated in generating 'real' spaces that users see as if turning their heads in different directions (Grau 2003:165-173).

Figure 14: Head Mounted Device and Data gloves.
(Virtualreality.net.au).

The development and refinement of a data glove by Thomas Zimmerman and Jaron Lanier in the 1980s allowed users to move computer generated objects. The data glove is a specialised sensor that tracks the movement of the fingers and hand in order to move virtual objects in virtual space. The recently marketed Wii games by Nintendo work on a similar principle allowing users to play virtual sports like tennis. Instead of a glove, a wireless controller or remote is held in the player's hand. This controller detects the hand's movement through space and translates this information so that the tennis ball, for example, or tenpin bowling ball, behaves on screen as it would in the real world.

The term virtual reality also encompasses phenomena such as virtual worlds, which are places on the Internet where people can socialise with other people via the keyboard or through voice recognition. Virtual worlds such as *Secondlife* and *Whyville* allow participants to invent themselves by determining their age, gender and physical characteristics. These virtual selves can then communicate with other virtual selves and build virtual relationships in real time.

Another form of virtual reality (referred to by Grau and Hansen as *mixed reality*) makes use of a real space that displays projections of virtual images in

response to participant behaviour. An example of this is *Place-Hampi* (see 2.6), which was discussed previously as a virtual museum exhibition. The imagery of the actual place called Hampi is projected onto a panorama screen so that the viewer feels as if he or she is in the centre of Hampi's space. The imagery changes as the viewer moves, much as it would be perceived in Hampi itself. Woven into the imagery of Hampi are computer generated images of Hindu gods that are believed to inhabit the area. *Place-Hampi* is thus a simulation of the experience of visiting Hampi. The inclusion of the Hindu gods, however, makes visible something that could only be imagined if visiting the real space. On the one hand, the ability to make visible something that is not visible can be very useful in a museum environment to explain abstract concepts such as gravity, electricity, or the first signs of life on the planet. Yet, this could be seen to compromise the truthfulness of the exhibition and its value in the museum environment (*Place-Hampi* was on exhibition in the Victoria and Albert Museum in Melbourne in 2009). If museums are places for free choice learning, convincingly argued by Falk and Dierking (2000), then the imaginative/unreal representations of gods may not be suitable material for a museum. As Grau (2003:202) states, "inside the 'omnipresence' of virtual reality, any mechanism of knowledge acquisition will be affected". Most importantly, the ability to distance oneself critically from what is seen is hampered. This is particularly so in *Place-Hampi* because imaginative and realistic representation are combined, potentially leaving the viewer confused as to the legitimacy of the imagery. However, as mentioned previously, even simulations that are close to the real experience require the suspension of disbelief. This allows the participant to become immersed in the simulation, and constitutes the power of virtuality. This suspension is not permanent however, and criticality returns after the immersive experience. It would be at this point that the visitor would notice that the images of the gods are well worn symbols of deities familiar even to those not of the Hindu faith. They are not the result of the arbitrary imagination of one person but symbols recognised by the collective consciousness of a large group of people over a long period of time. An understanding of the significance of *Place-Hampi* thus occurs over time and is not necessarily concurrent with the immersive experience. The initial engagement experienced while immersed is an

important element of knowledge acquisition when balanced by that content which survives the immersive experience.

3.6 New media and the museum

As can be deduced from the above discussion on new media, new media has many qualities that could enhance the museum experience. Physical interactivity is one of these and is common to all new media. It is perhaps the most obvious feature, although not the only one. In the museum environment all interactivity is important, be it physical, cognitive or affective. If the visitor does not interact with exhibits, neither enjoyment nor meaning making can take place. The physical nature of new media interactivity, however, increases engagement with exhibits, which facilitates both learning and entertainment. This occurs because physical interactivity adds proprioception to the other senses in the same way that being able to handle a museum artefact rather than merely looking at it, adds the sense of touch to the visual sense, thereby providing more stimulation. Furthermore, as noted previously, the physical nature of new media interactivity accommodates the *Bodily-Kinaesthetic Intelligence* (Brualdi 1996:2), thereby also facilitating learning.

From a more negative point of view, new media in a museum environment could be described as“ a whirl of digital screens, projects, sounds and smells, multimedia stations and interacting devices” (Silvestri 2008: 54). This implies that new media can be over stimulating, which could increase the entertainment value in the museum but could decrease the learning experience as visitors become distracted by the spectacle.

New media interactivity can be thought to give the audience/visitor too much power in determining the meaning of an exhibit. This seems an implausible view considering that, even when surfing the net, the user’s options are limited by the numerical structure of the web. Furthermore, if one adopts the postmodern view, all human experiences are mediated and therefore neither audience/visitor nor museum director/curator has absolute control over communication or meaning within the museum. Silvestri (2008:54-55)

however, sees the lack of control on the part of museum curators and administrators as a flaw in contemporary museums. Silvestri (2008:55) states:

> Visitors are forced to fall back on their own resources to respond to whatever interests or fails to interest them … information is supplied at random, with the museum no longer acting as a guide or accepting responsibility for the outcome. Whether or not messages are received becomes a matter of chance.

Although she is not specifically referring to new media in museums, her comments could be applied to new media in that the rhyzomatic structure underlying new media can be perceived as random, and the freedom of choice offered to the visitor could be seen as an abdication of responsibility by curators/directors. Silvestri's point of view implies that she has a didactic and expository approach to learning in the museum, hence her objection to visitors having to "fall back on their own resources" and information being "supplied at random" (Silvestri 2008:55). This is in opposition to postmodern theories. Postmodernists, according to Margot Lovejoy (2008:65) accept the "chaos, instability, and many layered complexity of commercial mass culture". The question thus arises as to whether postmodern museums could be regarded as being part of "commercial mass culture" (Lovejoy 2008:65) and if they are, what differentiates them from theme parks such as Disney World or Disneyland where information is combined with entertainment. The major difference is that, while museums do wish to entertain their visitors as well as educating them, they do not, if curators and directors have academic integrity, seek to sanitise, homogenise and Americanise the contents and themes of their exhibits, something that Mike Budd and Max Kirsch (2005:7) claim that Disney parks do.

In conclusion, then, new media has the properties that make it a valuable communication tool in the museum environment. It has the ability to engage visitors, entertain them and educate them on many diverse levels due to its fluid nature. It has the ability to concretise abstract phenomena and develop understanding and new skills through its interactive nature. On the more negative side, it also has the ability to over stimulate visitors and create

spectacular artificial simulations. The integrity of museum curators and directors and the quality of research underpinning the museum exhibits provide the balance.

The following chapter uses two case studies to explore the value, or lack thereof, of new media within the context of two South African museums. A description and general analysis of Maropeng and Origins provide the grounding for a discussion on the effects of new media.

CHAPTER FOUR
COMPARATIVE ANALYSIS OF THE MAROPENG VISITOR CENTRE AND THE ORIGINS CENTRE FROM A NEW MEDIA PERSPECTIVE

4.1 Introduction

This chapter aims to elucidate the communication strategies used by the two museums under discussion from a new media point of view. This entails not only a description of new media used in each museum, but also references to communication influenced by the properties of new media without necessarily being new media. For example, once the advantage of hypertext has been learned, namely that the reader has more control in determining the route of information gathering, this principle can be applied to other media. According to this idea, the architectural layout, amongst other options, can also provide the museum visitor with a choice in the sequence of information gathering.

The chapter focuses on the displays and their organisation within the museum and links observations to theoretical issues concerning, amongst other things, cultural and physical anthropological issues as revealed by visual analysis. Since the reader may not have visited either museum, it is necessary to describe both of them quite comprehensively for the purpose of clarity. Semiotics and discourse analysis are the methodologies primarily used for analysis.

Since both of the museums under discussion refer to themselves as centres,[1] it is important to determine whether they can indeed be considered to be museums. Reference is, therefore, made to the arguments already posed in Chapter Two to provide validation for identifying both centres as museums. Each museum is then described in order to facilitate an analysis in the use of, the potential for, and the lessons learned from, new media.

4.2 The Maropeng Visitor Centre and The Origins Centre as museums

[1] This could be because the term *centre* is less intimidating than *museum*.

Heinrich and Pollock (2005:235) state that the essential function of a museum is to safeguard society's heritage. In addition to this, the 1995 statutes of the International Council on Museums lists a number of properties considered to be the core qualities of museums. These are as follows: Museums are non-profit making, permanent institutions, that are in the service of society, open to the public, and institutions which acquire and conserve artefacts for the purposes of research, education and enjoyment (Hudson 2004:85). However, as was noted previously (see 2.6), museums are beginning to become "collections of knowledge rather than objects" (Keen 2004:1). There is also more emphasis on the visitor experience as research in this area has become available (Coombes 2004:278-281; Roberts 1997:15-45). Despite these indications of changing trends, cultural memory still plays an important role in determining people's conceptions and expectations as to what constitutes a museum. Thus, many museums can still be regarded as places for contemplation and places where artefacts are displayed. The most significant change in the postmodern museum is probably the use of a wider range of media than previously. As already argued, this adds to the entertainment value of the museum experience but also aims to make communication more accessible, thereby also increasing the educational value.

Both Maropeng (2005) and Origins (2006) can be regarded as postmodern museums if only because of the dates of their inception but most importantly because both museums also make use of a wide range of media, using film, video, and interactive techniques as part of their display. In addition, both centres comply with more traditional criteria. For example, they both safeguard society's heritage in that their themes deal with the origins and evolution of mankind. They are also of service to society because they are open to the public and their themes are underpinned by research. Furthermore, both centres display artefacts, although Maropeng displays artefacts on loan from other institutions. There is therefore enough compliance with the above criteria to regard both centres as museums, even though there cannot be a definitive definition that fits all museums.

4.3 The Maropeng Visitor Centre

4.3.1 General background

Maropeng was opened by Thabo Mbeki (then President of South Africa) on 6 December 2005. The centre was designed by Gap architects to resemble a tumulus (an ancient burial ground, which, interestingly, in terms of its symbolic use at Maropeng, is not found in sub-Saharan Africa although widely spread throughout Europe and Central Asia). Maropeng is situated in The Cradle of Humankind, a United Nations World Heritage Site since 1999, and the place where many important fossils relating to human ancestry have been found. Maropeng is funded and managed by a partnership between the Gauteng government and Maropeng a ̄Afrika Leisure (Pty) Ltd, with the University of the Witwatersrand being the major excavator of the 47,000 hectare cradle in the Magaliesberg (Davie 2005). The major theme of Maropeng is the birth of The Cradle of Humankind and the birth of humankind through the evolution of hominids. Paradoxically, the symbolism of the tumulus and exhibits along the walkway to the tumlus, suggest burial and death.

Figure 15: The tumulus and walkway at the Maropeng Visitor Centre, 2008. Photograph by the author.

4.3.2 Description of the Maropeng Visitor Centre

The walkway (Figure 14) that leads up to the entrance of the museum is lined with replicas of original fossils found in the Cradle of Humankind and with granite rocks from the area. These rocks are engraved with information such as “Life first emerged about 3.8 billion years ago. Our journey begins in South Africa, where fossils of some of the earliest known life forms have been found” (About the Maropeng Visitor Centre [sa]). The fossils are enclosed in transparent domes (Figure 15) similar to those that enclose wreaths. Indigenous grasses (Figure 14) grow on both sides of the walkway and on the tumulus itself.

Figure 16: Fossil and engraved granite rock at the Maropeng Visitor Centre, 2008.
Photograph by the author.

The visitor map (Figure 16) indicates the various themes to be discovered within the tumulus, which, except for the walkway, contains all of the museum exhibits. The visitor map provides a layout for this arrangement of themes, six in total, but each theme is made up of a number of exhibits.

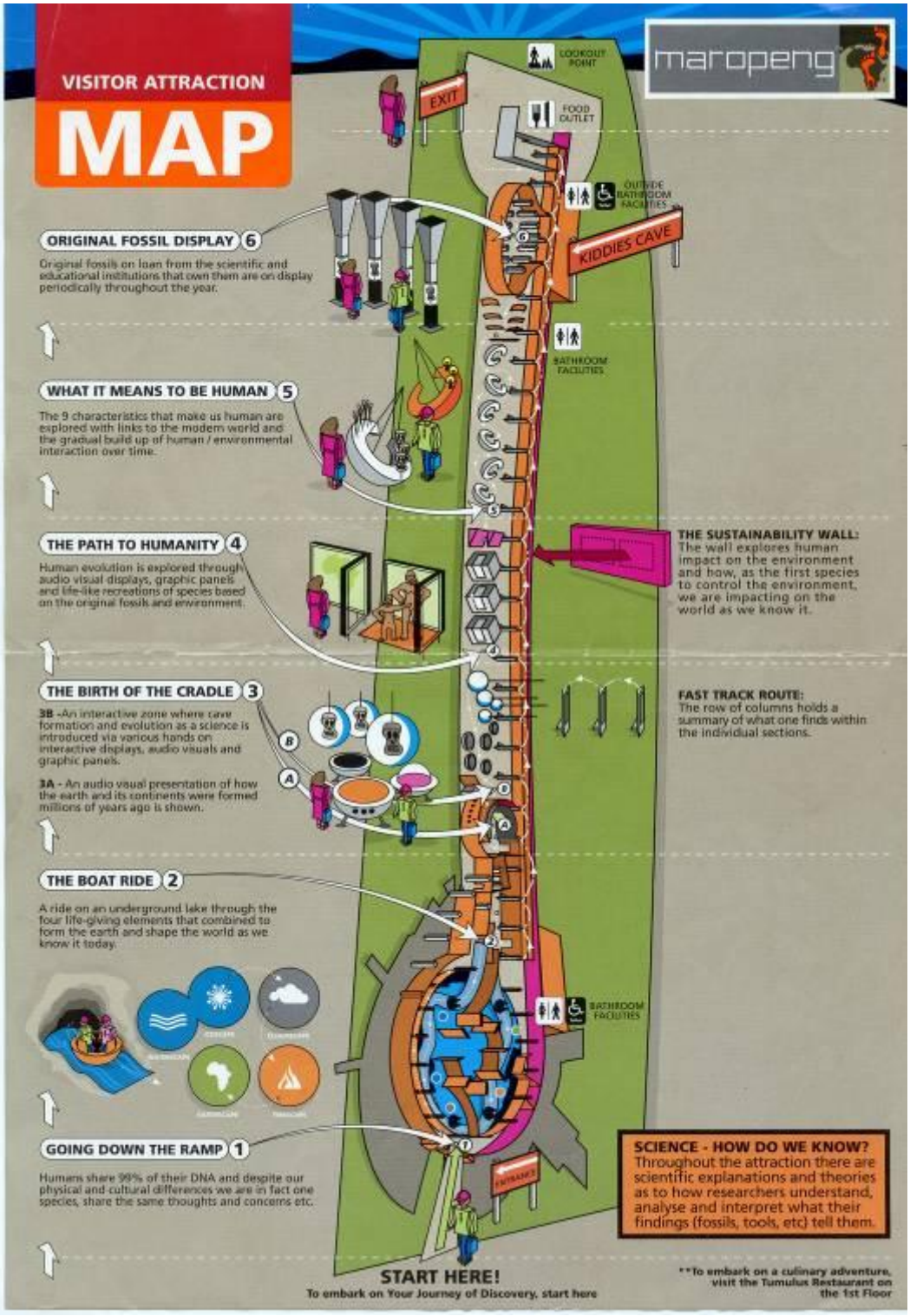

Figure 17: The Maropeng Visitor Centre attraction map.

The entrance hall of Maropeng is a very large space (Figure 17). It contains a large pool fed by strong water jets (Figure 18) and abstract displays and banners communicating the themes of water, fire (Figure 19), earth and wind, which recur at various points in the museum, as thematic elements.

Figure 18: Entrance hall at the Maropeng Visitor Centre, 2009.
Photograph by the author.

Figure 19: Pool and water jets in the entrance hall at the Maropeng Visitor Centre, 2008.
Photograph by the author.

Figure 20: Abstract representation of fire in the entrance hall at the Maropeng Visitor Centre, 2009.
Photograph by the author.

A staircase leads the visitor down to a ramp that leads further down to an underground lake. A boat ride, reminiscent of Disney theme parks, on the lake navigates the visitor through manmade underground caves that represent the caves in the Cradle of Humankind. Lighting effects symbolise the four elements responsible for the shaping of the planet over time, namely, water, air, fire and earth.

On leaving the boat, an audiovisual presentation along the exit route of the underground lake explains how the earth and its continents were formed. Interactive exhibits, at the entrance to a large exhibition hall explain the birth of the cradle and introduce the concept of evolutionary theory. The exhibition hall is not the expected staid place of research and learning in that the exhibits are reminiscent of funfair, or theme park swings, or fantasy

spaceships landing (Figure 20). These ‘swings’ or ‘spaceships’, (which are also interactive), are the major visual attractions on entering the exhibition hall. Each of these carries a theme pertinent either to the forming of the Cradle of Humankind, or to specific abilities that distinguish humans from hominids. For example, humans have larger brains, and have more adept fine motor skills than hominids. Each particular exhibit requires the manipulation of discs or levers or the lifting of flaps in order to provide an interactive experience for visitors. If, for example, the visitor manages to correctly line up four images relating to an evolutionary sequence, a flashing light rewards the visitor (Figure 21).

Figure 21: Exhibition hall of the Maropeng Visitor Centre, 2008.
Photograph by the author.

Figure 22: Interactive exhibit at the Maropeng Visitor Centre, 2008.
Photograph by the author.

At the side of the hall, a row of columns reiterates the main concepts of each section. The visitor map (Figure 16) refers to this area as the “fast track route”. This offering of different degrees of involvement is a characteristic of new media. The journey through the museum culminates in an exhibition of original fossils even though the journey may take many directions (with the exception of the ‘fast track’) as the exhibition hall is quite large and visitors may wander in many directions. This choice of route is also typical of new media, allowing visitors to construct their own meaning.

4.3.3 Analysis of the Maropeng Visitor Centre

Rather than taking a positivist stance in the analysis of the two museums under discussion, a phenomenological and hermeneutic discourse is used. As such, the emphasis is centred on dynamics related to how the individual makes meaning or learns. This approach acknowledges that different people will arrive at different meanings even when confronted with the same message. However, if this view were adhered to too rigidly, any analysis of cultural phenomena, including Maropeng, would be fruitless. Mieke Bal (1994:160-161) solves this conundrum when she states that “codes have to be learned and their distribution varies (and changes) within a group.” Thus she allows for various meanings within a group, but also for some concurrence, as learned codes can be common to a range of people. The following analysis of Maropeng then, while not pretending to arrive at entirely indisputable observations, does presume the possibility that some common ground is to be found in people’s interpretation of the codes applied to this space.

The interpretation on approaching the Centre is that the tumulus shape of the museum, the fossils displayed under transparent domes and the messages engraved in granite from the area, all reinforce the theme of a burial ground. This is apt considering that the entire Cradle of Humankind is littered with the bones of ancient animals and hominids, which have been fossilised and are buried underground. The visitor is thus approaching an ancestral place. This

notion is reinforced by the meaning of the word *Maropeng*, which in Setswana means “the place where we used to live” (Davie 2005:1). The visitor is thus ‘hailed’ as a modern member of an ancient family. This in itself need not be contentious except when one considers Monique Scott’s (2007:2) criticism of museums that adopt the position that “human evolution has proceeded linearly from primitive Africa to civilized Europe”. Although this was a Victorian attitude, Scott (2007:2) holds that it is still prevalent today. An exhibit in Maropeng, which graphically and linearly shows evolutionary changes as moments in time, suggests that this ‘dominant reading’ may also be the case at the museum.

The scale of the building and its simple volumetric statement create what Silvestri (2008:54) describes as a “sculpture museum”. Although not similar to the “temple” (Coombes 2004:280) type of building exterior, or the imposing facades and entrance halls of many nineteenth century galleries and museums (Rose 2007:181), it is nevertheless powerful and dominating. The awe experienced by visitors as they approach this monumental burial ground, which is also a sculpture, continues as they pass through the entrance into the large space of the entrance hall. The use of water, large banners that are reminiscent of tapestries, and icons representing earth, wind, water and fire suggest that this is a sacred place. The visitor is thus cast as a pilgrim paying homage, which reinforces a theme already set up by the long trip to Maropeng. This long journey, an attribute of theme parks in general, also denies access for most working class people, as the journey can only be made by car or tourist bus (school children are bussed in during weekdays).

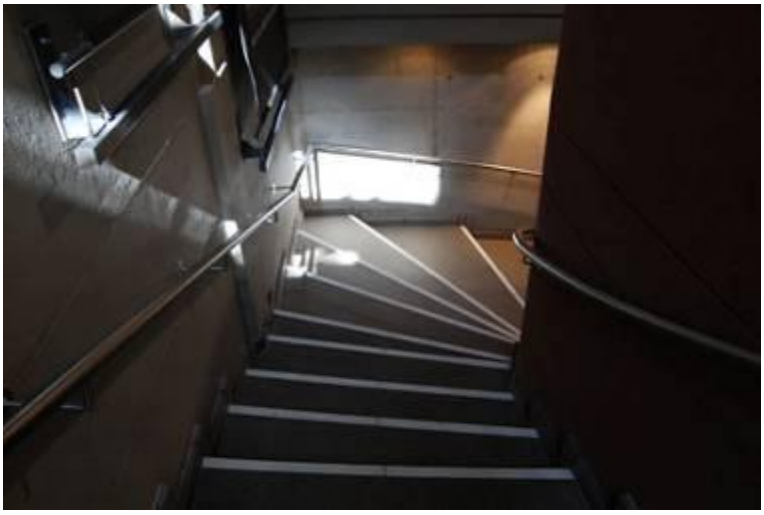

Figure 23: Stairway down to the ramp at the Maropeng Visitor Centre 2009. Photograph by the author.

The austerity of the staircase (Figure 22) together with the low level of lighting, and the slow pace of descent, once more creates an effect of awe or reverence in that the descent is ritualistic. On reaching the ramp the artificial lighting and slope of the ramp create the impression of descending deep underground towards some unknown but important place. From a psychoanalytical perspective this can be interpreted as a journey towards the discovery of the secrets of one's psyche. According to psychoanalytical theory, one descends to the unconscious[2] by means of free association, hypnosis or dreaming. From a popular culture point of view the journey into the underground has a similar slant. Bilbo, in The *Hobbit* (Tolkien 1937) a precursor to *Lord of the Rings*, confronts Golum in deep underground caves and gains access to the ring, which can make him invisible. Luke Skywalker in *Star Wars* (Lucas 1977) faces his destiny in a cave of snakes where he severs the head of Darth Vader. In mythology too, underground, referred to as the underworld, is significant for it is the place of the spirits of the dead. An example of this is Hades, the Ancient Greek underworld. Mythological archetypes such as *good* and *evil*, or Jungian[3] archetypes such as the *hero* and the *shadow* underpin popular culture such as in the examples mentioned

[2] Salvatore Maddi (1996:84) says of Sigmund Freud (the father of psychoanalysis) that he believed the unconscious to consist of "experiences that were once conscious and … have been defensively forced out of awareness because of their threatening nature". This understanding of the term unconscious is now part of the layman's understanding.
[3] Carl Jung (1875-1961), a psychoanalyst from the same time period as Freud, believed in the collective unconscious which was the seat of archetypes that influenced the conscious (Maddi 1996:87-90).

above. Memory, imagination and free association thus give the space deep significance.

Figure 24: Ramp down to the underground lake at the Maropeng Visitor Centre.
(Selpk.com).

Popular culture is again reflected in the boat ride through simulated underground caves. This is reminiscent of Disneyland as 'rides' are central to the experience of Disney parks. There is in fact a ride in Disneyland called the Caribbean Pirates, which takes one through caves on a lake in a boat. Umberto Eco (1986:46) states that, in the pirates' cave, "more than anywhere else, it [Audio-Animatronic[4] technique] demonstrates all its miraculous efficacy". Further on he states, "imitation has reached its apex and afterwards reality will always be inferior to it" (Eco 1986:46). The Maropeng ride, however, lacks the fascination of the Disney ride in that it does not at all resemble reality and certainly does not exceed it. An attempt has been made to create visual and auditory realism, but this has not been crafted with sufficient attention to detail to make it credible, nor has impressive technology been used to fascinate the visitor (Figure 24).

[4] Robots that convincingly look and act like human beings

Figure 25. ‘Realistic’ representation of icicles forming underground caves, at the Maropeng Visitor Centre, 2009.
Photograph by the author.

On disembarking from the boat, the next exhibit visitors arrive at is an audiovisual presentation (Figure 25) of the earth forming and separating into continents. In contrast to the caves, this exhibit is very impressive, largely owing to the beautiful imagery and the large scale. The cinematic narrative of the presentation is immersive in that a cinematic technique, which uses a space large enough for the eye not to see the perimeters of the screen, is employed. As a result, viewers feel themselves to be at the centre of the imagery, rather than outside looking in. This immersive quality, however, reduces the criticality of the viewer, and, together with the documentary style of the presentation, serves to make the viewer a passive absorber of scientific ‘fact’ rather than an actively engaged learner.

Figure 26: The Evolving Earth presentation at the Maropeng Visitor Centre, 2009.
Photograph by the author.

After this linear route, which prescribes the visitors' journey, they now enter a large exhibition hall where they can view the sequence of exhibits according to their choice, or so it seems. The ambient lighting in the hall is very low and all the interactive exhibits are well lit, giving them primary attraction value. In contrast to this, the audiovisual presentation on the theory of evolution, the expected main theme of the museum, lacks impact. This is partly owing to the position of the presentation (it is on a back wall) and the size of the presentation. Three people standing in front of the presentation obscure it from view for other visitors.

As mentioned above, the interactive exhibits relating to the birth of the cradle and to what distinguishes humans from hominids, form a strong visual statement. In the exhibition hall these games look much like a game arcade, except that the games are not electronic but mechanical, and are intended to be instructional rather than merely entertaining. These interactive games do

not necessarily communicate to the visitor the message that the game was designed to do. An example of this is the game referred to previously, which requires visitors to line up four images related to evolutionary progress. Unfortunately, the visitor is not very likely to line up all four images unless the sequence is already known, or unless guided by a knowledgeable person. The interactivity, while encouraging exploration, leaves the discovery of content largely to chance, and as a result many visitors, particularly children, randomly turn dials or lift flaps without grasping the intended message.

Visitors are directed by visual interest rather than by a logical sequence. They are therefore not necessarily aware of the progression of themes, as information is received in bits that do not necessarily relate to each other. This need not be considered a drawback as, according to the constructivist theory of learning discussed previously, visitors will create their own sequence of information according to the structure, or meta scheme, of the meaning that they make, or have made and bring with them.

The display of original fossils at the end of the hall seems somewhat unrelated to the museum exhibition as a whole and is something of an anticlimax. The fossils are enclosed in glass boxes in an enclosed exhibition space, which is separate from the exhibition hall. There is also very little narrative explaining the background of each piece.

4.3.4 Analysis of the Maropeng Visitor Centre from a new media perspective

Maropeng makes little use of new media, and when it does, it is not for the interactive quality that is one of the strengths of the use of new media in museums, as previously argued. All the interactive displays are mechanical, and, unlike computer games, cannot respond to the player's level of expertise, do not involve the player emotionally and are not immersive. This is partly owing to the fact that the content is not sufficiently complex and the games, or activities, do not require physical skill or strategising. The level of engagement is therefore somewhat superficial. Furthermore, most of the interactive

displays can be classed as what Hein (2000:29) refers to as “stimulus-response education”, which is basically conditioning and does not require insight or even consciousness, thereby leaving little room for meaning making.

There is, however, an exception to the random learning of most of the interactive exhibits. The Human Brain exhibit (Figure 26) includes an activity that involves moving a metal loop along a curvilinear rod without the loop touching the sides of the rod. If the sides of the rod are touched by the loop, a red light flashes and alerts players to their lack of competence. The activity requires a steady hand as well as concentration, thereby involving participants both physically and mentally. Of all the interactive exhibits at Maropeng, this one, according to my own observations, engages people of all ages. However, the relationship of the activity to the content of the display is not clear. The impression is thus created that the activity exists to entertain visitors rather than being intrinsic to, or contributing to, the message of the display. This would be an example of what Silvestri (2008:55) refers to as “the museum no longer acting as a guide or taking responsibility for the outcome [of the acquisition of knowledge]”.

Figure 27: The Human Brain exhibit at the Maropeng Visitor Centre, 2009. Photograph by the author.

The exhibit of the earth evolving and dividing into continents (Figure 27) is the most immersive of the exhibits. The media used, namely digital imagery and sound, combine with the content to engage and inform the viewer. This presentation has some of the qualities that have been outlined as being typical of new media. It is created and presented digitally, thereby allowing for the simulation of a reality that occurred millions of years ago over a long period of time. It engages visitors multimodally[5] and is immersive. It does not, however, engage the visitor physically, nor does it allow the visitor any choice in navigating the sequence or complexity of information. The question then is: can this presentation be regarded as new media or not? If Manovich's (2001:25) view that "media becomes new media" by reducing media such as images, texts and sound to numerical data, then this presentation falls into the category of new media. However, because it does not involve any physical activity and choice on the part of the visitor, interactivity is limited and the visitor remains a passive observer.

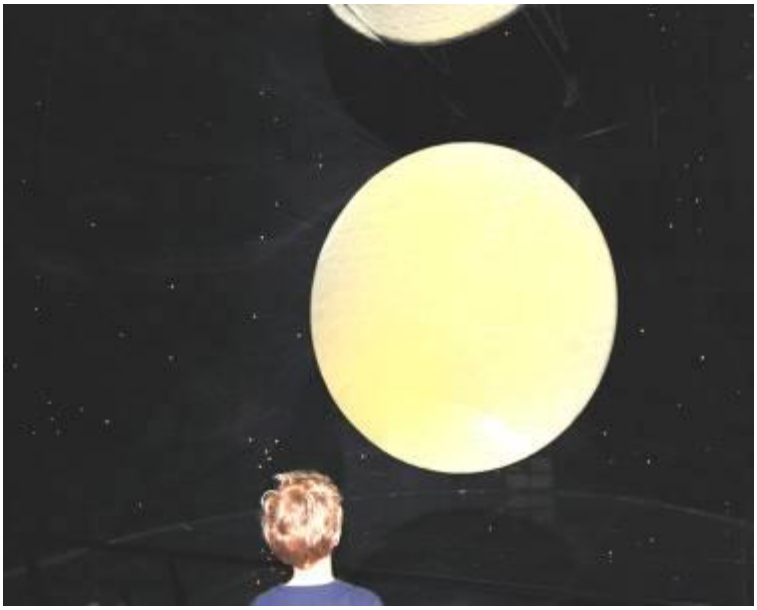

Figure 28: The Evolving Earth presentation at the Maropeng Visitor Centre, 2009.
Photograph by the author.

[5] The term 'multimodal' is used by Kress and van Leeuwen (2001) to describe contemporary communication, which signifies the same meaning through various modes and media.

In contrast to the evolving earth presentation, the visitor's boat ride through simulated underground caves has no connection whatever with new media interactivity. As discussed earlier, lighting effects represent fire and ice in order to illustrate the elements that created the Cradle of Humankind. Once again, Disneyland comes to mind, which Eco (1983: 48) states, "is also a place of total passivity". Had new media been used instead, in a way similar to its use in *Artificial Changelings* (Figure 9), there would have been no need to create a fake underground lake, or fake rocks. Sensors could have tracked human movement and position and changed visuals and sounds accordingly. Simulated visuals and sounds of the creation of underground caves and waterways could have been used in a way similar to the presentation of the earth evolving. By requiring physical interaction and a less linear narrative, the simulation might then have been more accessible to emotional and cognitive aspects of meaning making because the changing scenario would be related to the visitor's actions.

As mentioned above, the width of the main hall limits the perception of a linear progression towards the exit and therefore an expository presentation of information. Maropeng organises information in what may be described as a 'rhyzomatic' (Deleuze 2005:3-25) structure (typical of new media) because the central hall is a large open space without architectural cues regarding which route to follow. The visitor, thus, has many options for navigating through the information. In this way, visitors may feel that they are making choices regarding what information they want to investigate, rather than being manipulated by the spatial organisation of the centre. This suggests that the museum designers support a constructivist approach to learning where the visitor is active in the learning process. This viewpoint is reinforced by the use of interactive exhibits. The problem, however, is that more attention appears to have been paid to the visually spectacular aspects of the exhibits and less to the educational value. The interactivity of most exhibits does not extend the "mastery" (Holland, Jenkins & Squire 2003:28) of the visitor, be it physical or cognitive. The notion of Falk and Dierking (2000) of museums as *free-choice*

learning environments (emphasis added) has been neglected in many instances.

4.4 Description of The Origins Centre

4.4.1 General background

Origins, at the University of the Witwatersrand, was opened by Thabo Mbeki only a few months after the opening of Maropeng, on 8 March 2006. Like Maropeng, it is also funded by a public/private partnership between the University of the Witwatersrand and Imperial Holdings. The architectural practice, Mashabane Rose, converted 'The Wedge' (so named by Fine Art students who used the building) into the museum (Dlamini 2006). Unlike Maropeng, Origins has a comprehensive collection of fossils and early human tools, but also makes use of other media to convey the idea that creativity or decoration is what distinguishes humans from hominids. The museum also contains many exhibits dealing with the culture of the San people. Stone Age rock paintings, videos of painting techniques and graphic panels describe aspects of San life and the metaphysical nature of San beliefs. Contemporary South African artworks interpreting themes related to the San or to excavated fossils also support the theme of the human's ability to use symbolism to describe the metaphysical. Another theme is that Africa is the place where humans originated. In comparison with Maropeng, Origins is a more typical museum in that it collects and displays artefacts, often in glass display cases (Figures 28, 29).

Figure 29: Exhibit of San accessories at the Origins Centre, 2008.
Photograph by the author.

Figure 30: Archaeological exhibit at the Origins Centre, 2008.
Photograph by the author.

It is less dramatic and less like a gigantic playground than Maropeng. Its approach to interactivity, although not always digital in nature, makes use of

people's natural curiosity rather than relying on random exploration. There are drawers to be opened, touch screens for selecting videos relating to exhibits (Figure 30), and computer games inviting visitors to explore less obvious elements of the exhibition layout and the significance of exhibits. Panoramas, in conjunction with video, portray dream sequences of San medicine men, as well as historical sequences related to rock art in Southern Africa.

Figure 31: Interactive exhibit at the Origins Centre, 2008.
Photograph by the author.

4.4.2 Description of the Origins Centre

On arriving at reception, one is offered the choice of a guide or a handheld device that provides auditory information when the number next to an exhibit is entered on the keypad. The first exhibit is a garden with indigenous South African plants and trees. Passing through the garden, the visitor is confronted by a huge sculpture/mural (woven in wire by Walter Oltman) of the world, indicating the movement of humankind from Southern Africa to the rest of the world (Figure 31).

Figure 32: Walter Oltman, *Map of the World*, 2006.
(www.dac.za/publications).

Immediately to the right of this world map, in its own alcove, is a hologram of an engraved piece of ochre dating from about 75,000 years ago. The visitor is invited to touch the 'stone', which is not really there. This movement activates a video where the discovery of the stone is re-enacted and its significance is explained.

Figure 33. Image of engraved ochre at the Origins Centre, 2008.
Photograph by the author.

On the side of this video is a glass case exhibiting excavated prehistoric tools. This archaeological theme is carried through by a set of drawers containing

replicas of fossils of hominid and human bones, which have been reconstructed to show the whole bone or skull rather than the excavated fragments. The handwritten labels, tied to the 'fossils' with string, give the impression that they were excavated and labelled somewhere in the nineteenth century. This gives the fossils an aura of the original, even though we know they are replicas. Visitors are invited, by a sign on the drawers, to open these drawers and discover and handle the replicas of fossils (Figure 34) within. An information panel states that the concept of humans originating in Africa is supported by archaeological, palaeontological and genetic research (Figure 35).

Figure 34: Replicas of reconstructed fossils at the Origins Centre, 2010.
Photograph by the author.

Figure 35: Information panel at the Origins Centre, 2009.
Photograph by the author.

This space, a wide corridor, also contains three computer consoles with touch screens, allowing the visitor to choose various videos related to the exhibit

themes displayed thus far. A space resembling a small theatre leads off the side of the corridor where a film describing how humans migrated from Africa to populate the rest of the world is shown. From this point on the museum concentrates more specifically on the San[6] people, who we are said to be the oldest occupants of Southern Africa. The corridor makes a u-turn and in this space information panels and displays of artefacts describe past and present ways of the physical and cultural life lived by the San. The underlying thread of this section of exhibits is expressed by an information panel, which states that the San are "a creative and innovative people" (Figure 36). This fits in with the museum's theme of creativity or the decoration of objects distinguishing humans from hominids.

Figure 36: Information panel at the Origins Centre, 2009.
Photograph by the author.

The corridor feeds into a large space, approximately 120 square metres in size. This space is dominated by a stuffed eland and a film on a large screen showing the hunting techniques of the San. Information panels inform visitors that the eland is central to San ritual and thought. Also in this space is a video of a researcher showing the making of pigments and the painting techniques of the San, as well as original art and replicas of original San rock art. Once again there are computer consoles allowing visitors to choose videos related to the contents of this space. The consoles also allow visitors to play a

[6] Although the text panels and photographs do not seem to treat the San as 'exotic others' many statements made may be seen to be patronising. However, where information is available, San people are quoted and photographs provided. Furthermore, colonial attitudes to indigenous people are questioned. The museum questions colonial attitudes to, for example, the 'white lady' (a supposedly European figure in a San rock painting) and 'Saartjie Baartman' (a Khoi-San woman paraded around Europe as an 'African Venus' in the early nineteenth century).

computer game, which is a virtual tour. By means of moving an avatar across the screen the visitor explores the virtual museum. Questions and answers, included in the game, test the visitor's knowledge or recall of information provided by various exhibits. A contemporary artwork by Willem Boshoff is an unusual inclusion in a museum concentrating largely on palaeontological and archaeological themes (as are the other contemporary artworks). Boshoff's artwork, *Signs of People* (2006), consists of clear Perspex sign tags, suspended from the ceiling. Each sign tag has white polyvinyl chloride letters on it stating the name of a language or ethnic group in South Africa. A revolving light creates a pattern on the floor and on the bodies of visitors, thereby creating a shifting textual image.

Figure 37: Willem Boshoff, *Signs of People,* 2006,
Photograph by the author.

The next space is a small theatre with a large curved screen. Projected onto this screen is a film using cinematic effects to create a semblance of the experience of a trance dance, for example, *The Dance of Death, The Dance of Life.* Through the use of distortion and transparent layers of images, the impression of a shaman moving into a metaphysical realm is created.

The following space contains information panels and video monitors that explain San thought and belief. In the same space, *Axis Mundi* (2006), an installation by Russell Scott in collaboration with two other artists "and people

from his workshop" (Davie 2006:5), provides a more intuitive understanding of San beliefs from a contemporary point of view (Figure 38).

Figure 38: Russell Scott, *Axis Mundi,* 2006.
(Totem-media).

On the floor in this same space is the image of a much scaled down pool of water with a hippopotamus-like creature swimming around in it. If a visitor stands on the creature's head, the image changes and the creature appears to bite the visitor's foot. This image only begins to make sense when viewing another (large scale) film, which explains the role of the shaman in the making of rain. According to the film, a trance dance allows shamans to enter the spiritual world. Here they travel to a waterhole where the rain animal – a hippopotamus-like creature – lives, and they entice it out of the water. With a noose around its neck they transport it through the sky to the place where they want rain and they then proceed to milk the animal. This milk is in fact rain.

The next section of the museum deals with rock art that was not done by the San but by other people of South Africa. The first of these is a replica by Lawrence Raubenheimer of a semicircular rock face painted with thick white pigment Figure 39). The painting represents the capture of Chief Makeboho

by Paul Kruger's forces after the Hanarwa people resisted Paul Kruger's invasion in 1894. It is one of the few rock paintings so far discovered that depicts a train (Origins information panel).

Figure 39: The capture of Chief Makeboho at the Origins Centre, 2010. Photograph by the author.

In the same area as the rock art of the Khoe and Bantu speaking people is an installation by South African artist Joni Brenner called *Extracts* (2006). Sculpted heads, some clay and some bronze, are placed on plinths of varying heights (Figure 40). According to the plaque on the base of the sculpture, "the sculptures look like ancient fragments – small pieces suggestive of a larger history" (Origins 2006), which is also suggested by the pieces of rock paintings and fossil fragments displayed in the museum. This blurs the distinction between the art work and other museum exhibits.

Figure 40: Joni Brenner, *Extracts*, 2006.
Photograph by the author.

Before exiting the museum through the gift shop, visitors encounter another art installation entitled *Double Visions* (2006) by Pippa Skotnes and Malcolm Payne (Figure 41). The installation consists of a grid that holds small square containers, which at times hold fossil-like sculptures and at others, children's drawings that resemble San paintings. A section also holds what resembles antique books with portraits of individual San people copied from historical sources. Patterned glass fills the beginning and end of the sequence, suggesting the blurriness of double vision. Double vision also suggests that the visitor is looking at the past through present eyes and this combination of old and contemporary visions means that there are no clear cut answers.

Figure 41: Pippa Skotnes and Malcolm Payne, section of *Double Visions*, 2006.
Photograph by the author.

Opposite *Double Visions* are computer consoles inviting visitors to learn about their genetic inheritance. This reinforces a theme brought up earlier in the museum, which explains how people are genetically related to their ancestors. In order for visitors to discover the place of origin of their ancestry, various questions need to be answered and options selected. The resulting confirmation is rather disappointing as, unlike real genetic testing which requires a blood sample, this is only a response to questions answered and therefore reveals no surprises. The surprise happens when turning around, as the visitors discover photographs of themselves on a big screen, along with their names, the data for which was put into the computer as part of the logging in process.

4.4.3 Analysis of the Origins Centre

Both the garden and the sculpture (Walter Oltman 2006) of migration from Southern Africa to the rest of the world provide a Southern African context for the visitor. This is important because, unlike Maropeng, which is situated in the Cradle of Humankind, Origins is in a densely built up area that could be in any part of the world. Furthermore, the museum is in a building that was not originally built for its present purpose, and therefore has no inherent symbolic connotations related to the museum themes, as does the tumulus at Maropeng. Establishing a Southern African context at the entrance to the exhibits helps to orientate visitors and make them aware, even if only subliminally, that the museum themes are all related to Southern Africa, even though they may have global significance.

The fact that the museum is situated on the campus of the University of the Witwatersrand, that the University is a partner in the enterprise, and that the collection belongs mostly to the university, gives the museum an “aura of seriousness of intellectual … intent” (Lister & Wells 2004:65). This is not necessarily to say that Origins appeals only to ‘highbrows’. Visitors have a choice in determining the scope and direction of information they wish to

access via the handheld guide and the computer consoles. In other words they are not dictated to or made to feel out of their depth. Many of the exhibits are also visually spectacular and therefore can be seen as popular rather than elitist in terms of culture.

However, the use of the name *Origins* for a museum, which to a large extent exhibits San culture, raises questions as to what the underlying ideology is concerning the San and other 'primitive' cultures exhibited in the museum. Are the San viewed as being the origin of people in South Africa? Is South Africa thought of as being the origin of Humankind? These questions appear not to be valid as one moves through the museum. Visitors are told quite soon in their journey through the museum that Africa (not South Africa in particular) is the origin of humankind. This is communicated through archaeological exhibitions supported by the handheld guide and by a film depicting the movement of humans from Africa to the rest of the world. Visitors are told, via an information panel that the San descended from the first occupants of Southern Africa. Their civilisation is thus depicted as the oldest civilisation of Southern Africa.

Scott (2007:2) states that "while museum visitors are active ideological agents … there are patterns and limitations to the universe of meanings they make". One of the patterns she describes is one of Western viewers,[7] who have a "long history of stereotypical images of a static, primitive Africa" (Scott 2007:3) and therefore are attached to the narrative of cultural progression. In this instance, the San would not be respected for being the oldest civilisation in Southern Africa. This is further complicated by the fact that the San and Bantu speaking peoples' rock art is exhibited along side contemporary South African art who are all of European or American descent. This could be read as Western art having significantly 'progressed' from rock art. It could also be read as aligning contemporary culture with ancient culture through the medium of art. The latter reading would appear to be more in line with the interpretive strategy of the museum. This view is supported by an exhibit,

[7] South African viewers are not Western viewers but are sufficiently affected by Western films, television, computer games, etc. to be influenced by Western culture.

which stands next to an exhibit of an Eland, of sports helmets and jerseys which all have reference to animals. The intimation is that as the San revered the Eland, so sections of South African society (in this case rugby teams and fans) revere bulls, lions, cheetahs and so forth. Despite these animals being revered for their strength and swiftness, it could be argued that rugby is somewhat insignificant in comparison with the spiritual qualities attributed to the Eland by the San.

Although the above mentioned exhibits are open ended in terms of the meanings that can be attributed to them, the museum as a whole has largely, what Hein would term, a didactic or expository approach to education. The numbers next to each display guide the visitor through a logical sequence of information. This is supported by the spatial organisation, which is essentially a long winding corridor and allows for movement in one direction from beginning to end. Computer consoles along the route, however, offer the visitor the opportunity to explore topics in a less controlled manner, in that the visitor can choose to view a variety of topics. The consoles also have a computer game that involves an avatar negotiating her/his way around the museum according to how the player responds to questions. The concept of having a virtual museum within an actual museum has a humorous twist to it. It also provides the visitor with another mode of learning and entertainment (since it is a game), one in which the visitor is actively engaged, thus enhancing the museum experience.

Returning to the inclusion of contemporary South African artworks, these respond to the various themes in the museum. They also involve the visitor more actively than some of the other exhibits and information panels in that they require interpretation by the visitor rather than the following of given information. The artworks also have the capacity to engage visitors on an intuitive level, which once again broadens both the learning and entertainment experience. Furthermore, the inclusion of contemporary artworks in a collection of indigenous rock art raises the question concerning the various roles of art in society. While the ritual nature of much of the indigenous art is mentioned, the question of the role of contemporary art in society is left for

visitors to consider and answer for themselves. This might be regarded as an abrogation of responsibility by museum directors and curators along the lines of Silvestri's (2008:55) objection to "the museum no longer acting as a guide". However, both from a constructivist learning point of view and a semiotic point of view, the visitor/viewer/learner plays an important role in the cycle of meaning making. Regardless of how 'responsible' the museum is in providing input for meaning making, visitors will still construct their own meaning, and may, in the absence of direct cues, enjoy the challenge. It is also interesting to note the inclusion of artwork with cultural and anthropological exhibits. This indicates a postmodern stance in which subject areas are not seen as discrete disciplines but are understood to be interwoven.

The museum as a whole presents much of its information in a narrative form, using either textual or cinematic mediums. The use of a narrative form instead of a mere list of historical or archaeological facts, allows visitors to become personally involved and adds an emotional engagement with the material in the museum. This in turn makes the museum experience more memorable, both from a learning and entertainment point of view. This again poses the question (asked previously in Chapter Three) concerning what makes museums of this kind different from Disney theme parks in that visitor entertainment and learning are evident in both. The point made in that discussion, that museums are not seeking to sanitise, homogenise and Americanise their contents (Budd & Max Kirsch 2005:7), still holds true. Disney parks are like cities without crime, poverty and pollution, thus they are sanitised. The parks present an idealised view of the world that does not represent the complexity of real life. Museums generally are not as one sided. In the case of Origins, for example, although the museum puts forward the idea that humans originated in Africa, other viewpoints are mentioned. Furthermore, where possible, narratives are presented in the first person by the people who are part of the narrative, or by people who researched particular issues. The content is therefore not as likely to be idealised (or negatively biased) and becomes more credible.

The cinematic medium, when used, is very immersive, particularly when presented on a very large and/or a panorama screen. The cinematic sequence depicting the San *Dance of Death, Dance of Life*, communicates the spiritual world experienced by the San during the trance induced by this dance. In this instance the medium of film, projected onto a panorama screen, is well suited to creating an immersive and evocative experience, which would not be possible using the more traditional museum's display of artefacts and text. The same applies to the film of San descendants providing insight into San mythology and ritual, most specifically the trance that induces rain.

4.4.4 Analysis of the Origins Centre from a new media perspective

Although not all the media used at Origins are new media, many of them, particularly the use of film projected onto large screens, have the immersive quality expected from new media. However, the physical interactivity associated with new media does not often occur. The computer consoles (Figure 30) are the most striking example of new media interactivity in the museum. The computer consoles allow visitors to select options by touching the screen. These options include various short videos related to the exhibits adjacent to the consoles, as well as the option to play a video game (Figure 42).

As mentioned previously, video games in a museum environment run the risk of trivialising information by their association with video game arcades. The content of the video game in Origins prevents this from happening as it is related to the content of the museum. The setting or stage that forms the backdrop for the action is a representation of Origins itself. The player manoeuvres the avatar around the museum by selecting icons. For newcomers to videogames this requires some experimentation, but mastery is easily achieved, and once achieved, makes the game less interesting. For players used to finding objects, weapons or opportunities in video games the clues are easy to follow. Each correct selection brings the avatar to an exhibit in the museum, and questions follow related to that exhibit. When answered

correctly, the player can then move the avatar to another portion of the museum.

While the game attracts attention, it does not necessarily have more holding power than real artefacts on display. This is partly because there is no contest between the player and another player, or between the player and the computer, nor is there the feeling that the game is controlled by rules which the player has to discover. The game also does not require strategy, but it is appealing in that players' knowledge, whether newly acquired from the museum, or previously gained, is rewarded by allowing them to proceed through the game. This is a typical stimulus-response approach to learning according to Hein (2000:29-30), and is more suitable for training than it is for meaning making. Nevertheless it would be a motivator if players did not have to play from the beginning every time the game was played (the game does not save players' previous attempts, a common feature for most video games). Players cannot therefore capitalise on their acquisition of knowledge.

Another downfall of the game is that, unlike the video game (as described in 3.3) created for the Design Museum in London (1989), this video game lasts too long. The combination of having to start from the beginning every time and the length of time required to complete it means that few players stay with the game long enough to complete it. As a result, the advantages of learning new information or reinforcing already known information are not fully achieved. In conclusion then, the ability of video games to immerse, engage, entertain and educate have not been fully realised in the design of this game. On the more positive side, this video game's ability to concretise abstract concepts is manifest its central message of discovery through exploration. This is a concept that underpins many museum experiences.

Figure 42. Scene from video game at The Origins Centre, 2008.
Photograph by the author.

As with networked computers and many Internet sites, the visitor is required to log in at first use of the video consoles at Origins. The information required is standard: name, password and email address. Thereafter the visitor can log in either through the password or email address. This information is retained by the system and allows the visitor to receive email notification of events organised by Origins. The museum thus has importance beyond the physical visit. Visitors can also send the information they are accessing from the consoles to their own email address. This last function, however, frequently does not work, thereby creating an expectation that is not fulfilled. This highlights one of the disadvantages of using new media in the museum environment, namely that the supporting technology has to be maintained.

The computer consoles allow visitors to make a selection from various videos by touching the screen. These videos provide further input on the exhibits around them. The consoles provide a rhyzomatic structure (common to new media), allowing viewers/visitors to “forge new links within and amongst documents” (Moulthrop 2003:694). Visitors can select various videos to view in the order they wish for and stop them at any time. Giving visitors a choice is important from a constructivist learning point of view (see 2.7) in that it gives them a feeling of control and a sense of investment in their meaning making. The arrangement of the exhibits is, in contrast, largely linear and visitors can

only proceed in one direction. This is a more authoritarian way of providing a learning experience. The handheld guide, as with the consoles, allows visitors to listen to short or long versions explaining the various exhibits thereby providing the same advantages as the consoles.

Another use of new media at Origins consists of the image, projected onto the floor, of the rainmaking animal (resembling a hippopotamus). This image falls into the category of new media in that it changes in reaction to any movement by the visitor (standing on the creature's head) in much the same way as the image changes in response to the viewer's movement in *Artificial Changelings* mentioned in Chapter Three. While many visitors appear to enjoy this interaction between themselves and the projection, the meaning of this interaction is not clear, as was mentioned in the description of Origins. The video, explaining the significance of the rain animal along with other San beliefs and San history is very immersive, mostly owing to the large scale of the projection and the dim lighting of the space in which it is projected. It also engages visitors on an emotional level because of the narrative and visual effects and on a cognitive level because of the content. These characteristics are typical of cinema as well as new media. The inclusion of the rainmaking animal is and example of new media used in the same way that the Hindu gods are included in *Place-Hampi* (see 2.6).

Nevertheless, the distinction between film and new media is increasingly difficult to determine with the advent of video cameras. Added to this, most film presentations, although captured on analogue are today edited digitally. It is perhaps the lack of physical interactivity that puts the presentation of San ritual and history into the category of film rather than new media. Physical interactivity, which results in the changing form of visual or auditory presentation, is perhaps the hallmark of new media. This is demonstrated in the artwork *ConFiguring the Cave* (see 3.5) and the museum exhibit *Place-Hampi* (see 2.6) where viewer intervention changes the visual and auditory scenes depicted. As mentioned in Chapter Three, this adds proprioception to other ways of perceiving and thereby provides a more engaging experience.

Also related to the section dealing with San belief and ritual is the cinematic sequence of the *Dance of Death, Dance of Life*. This is perhaps the most compelling of the cinematic and video exhibits at Origins. It manages to convey the mystical experience of the San spirit world through a variety of cinematic techniques such as distortion of the image, fading in and out of imagery, and layering of images. The lighting effects are also strongly evocative. The sequence shows a circle of San dancing to induce a trance in the healer and the experience of the healer once in a trance. An interactive sequence similar to *Artificial Changelings* (see 3.5) would have made the viewer feel part of the experience rather than merely an onlooker. Not only would this make the simulation of a trance experience more effective and engaging, but it would also prevent visitors from adopting a "respectful, but distanced observational gaze" (Dickenson, Ott & Aoki 2006:1). The sequence communicates abstract and affective concepts proficiently, although the lack of interactivity may very well be an opportunity lost.

The exhibits of other rock paintings, not created by the San, are more conventional in terms of a more traditional view of museum exhibits in that they are mostly artefacts supported by text or small scale videos. These videos depict, for example, the movements of different peoples in Southern Africa in a graphic rather than a narrative way. The inclusion of video games in this section of the museum would have created more entertainment and engagement. Furthermore, particularly in the case of the capture of Chief Mokoboho (see 4.3.2), a video game would allow players to identify with characters, thereby bringing history to life and again preventing the "distanced observational gaze" (Dickenson, Ott & Aoki 2006:1).

Although the use of new media can improve the visitor experience of entertainment and learning as illustrated above, it is not suggested that this be the only form of exhibition. Many of the exhibits that do not require physical interactivity, are nevertheless compelling. On the other hand, the computer consoles that invite visitors to find out about their genetic heritage are disappointing, even though they constitute new media. The reason for the disappointment is that the anticipated revelation of one's own genetic past

remains unfulfilled. An actual blood test would need to be taken to provide this information.

4.5 Comparative analysis of the Maropeng Visitor Centre and the Origins Centre in terms of interactivity, engagement and learning

As discussed in section 4.2 neither Maropeng nor Origins are stereotypical museums. In comparison with the stereotypical museum, both museums have moved towards a more public or consumer orientated strategy where entertainment and education are not seen as opposites and coexist in many activities. They also both focus on the visitor experience, allowing for different visitor profiles, rather than concentrating only on exhibits of artefacts or information.

The two museums have very different environments, the one calm and ordered (Origins), the other energetic and spectacular (Maropeng). Both museums do, however, offer learning and entertainment environments. In both environments visitors can choose what to pay attention to and to some extent, in what order to experience the communication. These outcomes are however, achieved in different ways. Origins allows for a more orderly and considered navigation through content, which is a didactic approach to learning (see 2.7). However, visitors are also able to make choices in navigating through information via the computer consoles, an activity that is an example of discovery learning or constructivist learning. The handheld guides also provide choice in that visitors can choose the depth of information with which they wish to engage. Maropeng, on the other hand, has a more flexible space, which allows visitors more choice in navigating their route through the exhibits. The question of choice on the part of the visitor is important for learning or meaning making to take place. From a constructivist learning point of view, choice is important for allowing visitors to build on prior knowledge and to follow personal interest.

It would appear that as part of their learning and entertainment strategy, but not confined to it, both museums employ interactive exhibits, albeit in different

ways. The Maropeng Visitor Centre offers primarily more engagement with mechanical systems, while Origins engages more electronic (new media) interactivity. This research has determined, however, that neither institution has used new media interactivity, nor principles that can be learned from new media, to full advantage for engagement, learning and entertainment in the museum environment in that the value of immersion through the physical engagement of all the senses has rarely been applied.

One of the reasons for this is that virtual reality, such as that used in *Place-Hampi*, has not been used to simulate environments or experiences. As already noted, the simulated underground caves at Maropeng remain unconvincing. The *Dance of Death, Dance of Life* at Origins could also be more engaging and awe inspiring if virtual reality techniques, which enable images to appear three dimensional and viewers to interact physically with the media, had been used. This would make the experience more engaging, a prerequisite for learning to take place. The hologram of engraved ochre, although very small in size, is more successful in this regard because it appears to be three dimensional and the visitor is invited to touch the ‘stone’. The movement of the hand towards the stone triggers a video that explains its significance.

From my observations, Maropeng is probably more ‘entertaining’ than Origins, especially for young children. Origins, on the other hand has better integrated learning and entertainment experiences in that the video consoles offer entertainment but also provide information relevant to the museum’s content. The various video presentations also combine entertainment and information and, owing to the cinematic techniques, are very engaging. Two of these presentations are projected on to semi-circular screens, which helps to put the visitor in the centre of the environment (another new media characteristic), thus providing another way of engaging the visitor. The interactive exhibits at Maropeng attract attention through the use of colour, glossy finishes and interesting objects such as a collection of small plastic human jaws that slowly open and close (Figure 43). However, the interactivity required for engaging with these exhibits is not related to the content intended to be understood by

the visitor. Furthermore, the visitor does not engage with the interactive presentations for very long as the tasks required are simple (lifting flaps or turning dials), and the content related to these exhibits, apart from being unrelated to the interactivity, is also quite superficial. The more in depth information is presented traditionally via image and text, although the very active atmosphere of the museum as a whole tends to overshadow this content.

Figure 43. Exhibit at Maropeng Visitor Centre, 2008.
Photograph by the author.

Hypertext, one of the products of new media, allows visitors to navigate their chosen route through information and to form their own links between bits of information, thereby creating their own sense of meaning (Moulthrop 2003:694). Once this principle has been understood it can serve to allow other instances of permitting freedom to determine agency in terms of navigation through information and meaning making. If a space is fluid enough, visitors can choose their own route through it and thereby absorb information sequences determined by their choice of what to pay attention to next. As stated previously, Maropeng's wide exhibition hall enables visitors to move from exhibit to exhibit largely according to their own choice. Origins, on the other hand, has a fairly linear route through the museum. The video consoles allow choice of navigation along the route, but, since the options are videos (the video game excepted) rather than hypertext, the navigation and formation

of links is limited to a choice of sequence between three or four videos. Nevertheless, both museums offer enough choice for the visitor to feel active in terms of meaning making or learning. As already pointed out, activity is an essential part of the learning process according to constructivist learning theory.

Finally, both Maropeng and Origins offer a fairly wide variety of physical movement as part of the interactive environment. At Maropeng, visitors lift flaps, touch different surfaces, push buttons, twirl knobs and rotate discs. At Origins, visitors touch a hologram, open drawers and handle replicas of fossils, stand on a rainmaking creature, touch and drag their fingers across video screens and press buttons on the audio guide. This physical activity is not an end in itself. It is intended to entertain and engage visitors more fully with the content as more senses, other than the visual, come into play. As has already been noted, this also improves learning as it accommodates different learning styles.

If both museums offer a range of physical activity, why then does Origins appear to be a more satisfying learning environment? The reason lies not only in the fact that Origins uses more new media interactivity, although this does contribute. One of the other reasons is that the information is less superficial than that offered at Maropeng and has been collected into narratives that visitors can respond to cognitively, emotionally and physically. It also has more authority as it is situated on university grounds and as the university as a partner. Maropeng, on the other hand, offers bits of information that seem unrelated to each other and therefore remain superficial. For example, much reference is made to the four elements, namely, water, air, fire and earth. These references are scattered across the museum space amongst other information. There are also many references related to cultural diversity despite genetic uniformity. However, the relationship between the four elements and cultural diversity is not made clear, if there is indeed a relationship.

What the comparison between Maropeng and Origins illustrates is that, although both museums use interactivity as part of many of their exhibits, in my opinion Origins is more successful at both engaging and educating the visitor. This is because of its use of new media interactivity rather than the mechanical activity used at Maropeng, in that new media makes it easier to create a link between the activity and the concept to be learned, particularly if the concept is abstract. An example of this is the computer game at Origins, which links the concept of discovery within the museum to the actual activity of discovering by walking through the museum, thereby reinforcing a concept by presenting it to attract different learning styles and interests, and to build upon previous learning. While interactivity is important in the museum environment both for its entertainment value and for learning purposes, it is not the only requirement. As mentioned in Chapter Three, without information worth communicating, all interactivity is superficial. At Maropeng it appears that the emphasis is on the spectacular and on the entertainment factor; that the means is more important than the message. Origins, on the other hand, has used some of the advantages of new media to communicate the message rather than overpowering it. Furthermore, the new media used at Origins is compatible with the principles of free choice learning (Falk & Dierking 2000) and constructivist learning (Hein 2000). These theories are more related to postmodern theory in that they are less didactic[8] and allow for multiple layers of engagement and learning. In other words, free choice learning and constructivist learning provide a more complex understanding of the role of learners, environments and educators in the learning process.

The comparison of the two museums from a new media point of view suggests that neither of them have used new media, or insight gained from new media, to full effect. The ability of virtual reality to simulate past or distant phenomena as in *Place-Hampi* has not been fully explored. Nor has the ability of new media to place the viewer at the centre of the experience as in

[8] This is not to suggest that there is no room within museums and learning environments in general, for didactic approaches. In its support of a range of learning styles, this study puts forward the idea that various educational approaches might be used to good effect within one learning environment. As such, this study disagrees with Hein's (2000:15) supposition that museums should restrict themselves to one approach in order to avoid confusion.

ConFiguring the Cave rather than being a mere onlooker, been developed to advantage. The rhyzomatic structure of new media information gathering has to some extent been used in both museums. Once again, this concept has not been fully developed, neither in Maropeng's structuring of space, nor in Origin's use of computer consoles. Visitors would be more engaged if their choices were broader and more instrumental in their search for meaning. Physical interactivity, where the action of the visitor/viewer changes the form of the presentation as in *Place-Hampi* (Figure 7), or *Artificial Changelings* (Figure 9) is used only in Origins where the rainmaking animal (see 4.3.3) responds to visitors standing on its head. As mentioned previously, this intrigues visitors but is not explanatory until the video of San history and culture is seen. It does, however, serve to develop the visitor's sense of curiosity, a valuable component of discovery and learning. Both museums make use of interactive games as a means of involving visitors and explaining concepts or convey information. The insights that video games provide are not used at Maropeng and are used only in a limited way at Origins. Video games' use of elements such as conflict between player and game; discovery of rules inherent in the game; the requirement of skills such as quick responses or the ability to strategise; and finally, a valued outcome of the game have been used to a limited extent at Origins. In short, the advantages of new media for engaging, entertaining and educating have not been fully expressed in either museum.

This chapter has focussed on new media as a communication strategy or an influence on communication within the chosen two museums. Descriptions of the exhibits of the two museums and a general analysis of these provided the context within which to assess the use and value of new media. The general analysis revealed some underlying ideologies such as the distancing of the viewer from the culture being displayed. This could be overcome by the engaging power of new media. The narrative of cultural progression was another underlying theme. Although this is a cultural attitude, the use of virtual reality or computer games could dispel such predispositions by allowing for identification. Finally, woven through the chapter is a discussion of the educational value of the media used and the organisation of the exhibits. New

media, or the principles of new media support free-choice learning (Falk & Dierking 2000) and constructivist learning theory (Hein 2000), both of which are conducive to learning in the museum environment. The following chapter, apart from providing a summary of the study, places it within the context of its value for present and future research.

CHAPTER FIVE
CONCLUSION

5.1 Summary of chapters

This study has used a wide range of literature not only in order to investigate whether new media interactivity can enhance the visitor experience in museums but also to determine whether it has advantages over other forms of interactivity. While most postmodern museums have recognised the importance of interactivity in the museum as a tool for engagement, and therefore learning and entertainment, the specific use of new media interactivity is still rare in use or discussion both in South Africa and internationally. The exception to this is the use of computers, although research comparing computers with other forms of interactivity not considered to be new media is rather sparse. This study, therefore, has addressed what can be considered to be an underdeveloped discourse in that it pulls together a wide range of discussions about new media and applies the many advantages for entertainment and learning to the museum environment. Furthermore, by analysing two South African museums in terms of the influence of new media, the global trend towards democratising learning in the museum can be seen to be important in South Africa as well. This is particularly of significance in South Africa as many schools still have insufficient resources, a gap for which museums can compensate.

The two museums analysed and compared are Maropeng and Origins. These museums were used for comparison because Origins uses a fair amount of new media interactivity while Maropeng does not (the interactive exhibits at Maropeng are mechanical not digital, as pointed out throughout). The exploration of the concepts of museums and new media provided an opportunity for weaving a tapestry from many theoretical points of view, such as visual analysis, psychological theory, museum studies and most notably new media theory. The comparison between Maropeng and Origins has revealed that, while both museums have used interactive media, neither of

them have used it in such a way as make full use of its qualities. The proposition has been put forward that the use of new media in a museum environment can engage visitors on a conceptual, emotional and physical level and therefore can enhance meaning making and entertainment. New media, as an interface between the visitor and content of the museum, makes available to the visitor both conscious and unconscious reactions to exhibits. The visitor is thus engaged on all levels.

Extrapolating from Maropeng and Origins to museums in general can be made because both Maropeng and Origins are shown to have sufficient characteristics associated with museums to be regarded as such. These characteristics were determined through investigating writings by various authors on museums from different historical periods. Two of the important functions of a museum were shown to be that they enable visitors to make meaning and to be entertained. New media, because of its interactive nature, its immersive quality and its ability to simulate events and environments not accessible to the visitor, enables both functions to be realised.

Although the authors consulted analysed museums from different viewpoints and different time periods, many of the functions and forms of museums discussed in Chapter Two are still relevant today. Themes such as: the museum as a place for contemplation; the museum as a place that displays collections; the museum as a place of surveillance and the museum as a place for education and entertainment are still pertinent to most museums. Chapter Two also noted that, with the advent of postmodernism, some museums have become places where knowledge, rather than objects is collected and displayed and in some instances museums are virtual in that they neither have objects nor a physical space but are visited on the Internet.

This investigation into the nature of museums provided the grounding for determining that Maropeng and Origins can be classified as museums. Chapter Two also included a section on different learning theories and how these influence museum design. The constructivist approach to learning, which holds that people construct their own meaning in response to a

situation, was deemed to be the most suitable for the museum environment, although other approaches were not necessarily deemed inappropriate.

An overview of the qualities of new media in Chapter Three led to the observation that new media is essentially digital, an interactive medium, immersive, has holding power and allows for physical, cognitive and affective engagement. These qualities led to the conclusion that new media is a suitable medium in the museum environment to provide for visitor learning and entertainment. The three different forms of new media discussed, namely, the video game, new media fine art and virtual reality, provided a more in depth understanding of the nature of new media and therefore its usefulness in the museum environment.

Essential to the value of video games is that players are engaged on an educational and entertainment level. Furthermore, in good games, players with different levels of skill can be accommodated as the games respond to players' actions. In new media fine art, the artwork also responds to the viewer's actions but for different purposes. Rather than trying to win a game the viewer makes meaning through the interrelationship of all the senses. Virtual reality gives participators the impression that they are acting in the real world when in fact they are acting in an artificial world. Simulations such as those used to train pilots are considered to be examples of virtual reality. Simulations are valuable in the museum environment as they can create an environment, such as a trip to the moon, which the visitor would not be able to undertake. However, the authenticity of the museum exhibit could be compromised.

The value of new media in the museum is that it has the ability to engage visitors, entertain them and educate them. However, Chapter Three established that it can be quite spectacular and could serve to over stimulate rather than engage visitors.

As previously suggested, Maropeng and Origins can be termed museums in that they have many of the characteristics associated with museums. Both

centres safeguard heritage and their themes are underpinned by research. Both are open to the public although, being private-public partnerships, do charge an entrance fee, which may be problematic in terms of access. In common with many postmodern museums they use a range of media to communicate their themes. In terms of new media, however, they are dissimilar.

Maropeng uses interactive displays that are mechanical and cannot respond to the player's level of expertise in the same way that video games can. The interactive displays do not require skill or the use of strategy and therefore do not immerse the viewer, nor do they involve the visitor emotionally. Some of the displays (not the interactive ones) do have some characteristics associated with new media, such as being immersive, but lack the physical, cognitive and affective interaction associated with new media.

Chapter Four established that Origins has new media displays that enable more in depth communication than the mechanical interactivity at Maropeng. Handheld guides, computer consoles spread throughout the museum and an interactive image of a rain animal projected onto the floor are instances of new media. These exhibits have the advantages that come with new media in that they allow visitors choice as to the depth and sequence of the information they wish to gather. This is important both for entertainment and for learning. Furthermore, visitors are engaged on a physical, cognitive and affective level, making the experience more potent.

Neither museum has used new media to full advantage however, in that the engagement offered by video games, new media fine art or virtual reality is not used to full effect. However, other museums from the same era, such as the Apartheid Museum and the Hector Pieterson Museum, do not use interactive new media at all. It would appear that new media as a communication tool is not yet a trend in South Africa, largely, I suspect, owing to a lack of knowledge in this area by museum designers. This is not too surprising as new media courses are relatively new in South Africa and usually attached to art departments. In terms of finance, new media need not

be too expensive to be an option. Origins must have had a smaller budget than Maropeng when one considers what the cost of Maropeng's building alone might have been, added to which is the cost of custom made interactive games and simulated caves and lakes. Finally, the cost of maintaining new media displays need not be higher than that of any other interactive display.

5.2 Contributions and limitations of study

While much literature exists concerning learning in the museum, for example, Hein's (2000) *Learning in the museum* and Falk and Dierking's (2000) *Learning from museums*, little literature exists on the use of new media in the museum and even less on the learning potential of new media. Where literature does exist, such as Baker's (1991) *An interactive computer video game for the Design Museum: Using technology to teach technology,* it is descriptive of a specific instance and does not go into depth concerning new media or the role of the museum. This study has provided an overview of the roles of the museum in society, as well as an overview of the characteristics of new media. By linking these two fields of study to learning and entertainment in the museum it has provided for cross pollination to occur and set up a discourse which could lead to further research in terms of the museum and new media, and specifically in terms of the role of the museum in South Africa.

The study and its conclusions are based largely on a literature survey, which then informed the site inspection As such, it is taking forward theoretical debate but is limited in its verification of what attracts visitors to museums and how they feel about new media and react to it. This type of information would require empirical and audience research, which is beyond the scope of this study. The study is also limited in that it has not attempted to analyse, describe or compare the numerical formulas that are the backbone of new media and how these relate to the form of a particular expression of new media. This would sit more comfortably in the field of computer engineering, or would at least require a person from this discipline on the research team.

5.3 Suggestions for further research

As mentioned above, this study could, and should, branch out into empirical research in order to determine whether theoretical discourse can be supported by other evidence. This is not to suggest that theoretical research is in any way inferior to empirical research. Each method has its own way of arriving at and influencing the making of relevant meaning. The method of this study indicates that cross-pollination can lead to interesting and valuable ideas. Taking forward the case studies of two South African museums, a broader study of South African museum issues and societal roles in the postmodern and postcolonial era would also be valuable. Tracking down South African creators of new media and analysing their creations in terms of their intentions and their effect on museums in particular, or society in general could also produce a very fertile investigation. Most importantly, the effect of new media as an educational tool inside and outside museums deserves closer scrutiny.

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