KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,

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COLLEGE OF ARCHITECTURE AND PLANNING

DEPARTMENT OF ARCHITECTURE

ENHANCING MUSEUM USER INTERACTIONS BY PROPOSING A SOCIO-SPATIAL CONCEPT FOR THE DESIGN OF A NATIONAL MUSEUM OF ARTS AND CULTURE

KNUST

DISSERTATION SUBMITTED TO THE COLLEGE OF ARCHITECTURE AND PLANNING OF THE KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF M.ARCH

(MASTER OF ARCHITECTURE) DEGREE

By

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October, 2012

DECLARATION

I hereby declare that this thesis report has been undertaken solely by me and is an original and not a duplicate or plagiarised work. It has resulted from thorough research, logical analysis and synthesis under supervision.

Signed ..... Date 2012

(Ruth-Anne Ankrah)

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I hereby declare that this work is an original research undertaken by my student and has been done under my supervision.

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(Course Director)

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DEDICATION

This is for Florence Ankrah, for being a mother amongst mothers and always supporting whatever path I chose. For my father, Alex Ankrah for always giving me the means to live my dreams, and for Kakra, who always believed in that dream.

For the late Sophia Ankrah, a woman of substance.

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This work is dedicated to the progression of architectural identity of my beloved homeland.

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To Kakra, thank you for being a backbone support.

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ABSTRACT

Within the current growth of emerging economies, there is considerable focus on the development of cultural industries; museums form a major part of this industry and are valued as significant contributors to economic development; However, in Ghana the museum itself has been marked by poor public participation and interest; it struggles for a reformed social perception and stronger sense of identity within the urban landscape. This thesis is an investigation of how various social interactions within a museum space enhance the user's experience; it focuses on the impact of spatial character and quality of museum galleries on these **social interactions**. The study therefore seeks to examine the relationship between ***museum user interactions*** and ***museum spatiality*** in achieving an enhanced **user experience**. The principal aim of this research is to develop a concept model for the design of a national museum of Arts and Culture through an analytical study of selected museum galleries and exhibition spaces – in particular, a study of the Ghana National Museum. The formulation of this concept model is based on ***socio-spatial design principles*** and proposes a practical approach for reshaping both the visual and social perception of museums in Ghana, towards the development of the Ghanaian cultural industry. The research is aimed at uncovering the extent of spatial interactions within the museum and forming a basis for the need for a socio-spatial approach to design of the museum space by employing a field study. On-site research was spread across a period of one year covered by three major/ notable exhibition events. As such, this thesis aims to serve as a contribution to the broader scope on the formulation of possible solutions towards the enhancement of social participation and appreciation for museums in Ghana.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND: MUSEUMS AND CULTURAL INDUSTRY

The identity of a museum is marked by its constant evolution and redefinition. Since its conception, the function of museums has extended beyond traditional exhibitions, research, collection, and education to more innovative communications, information, empiricism, leisure and more (INTERCOM, 2008). Yet, at the core of this multifaceted development, museums still maintain their role as agents of culture and cultural transmission. Zukin comments that, "With the disappearance of local manufacturing industries and periodic crises in government and finances, culture is more and more the business of cities, the basis of their tourist attractions and their unique competitive edge" (Zukin, 1996). In addition, Rybeznski (2003) remarks that, there is a shift to an economy where stress is more on the production and consumption of ***experiences*** than on ***physical products***. Presently, culture has become a key factor in the competition among cities to attract visitors, and an important part of the service-based economy (Porter 1998). For many global economies, present-day museums are immensely significant in assessing the strength of Cultural and Creative Industries. Load (2002) said that `cultural tourism has been identified as a growing sector of the tourism industry.' involving the participation of such public spaces as museums, art galleries, theatres, memorials, historic and religious edifices, to name a few.

Although they are as yet emerging in many developing economies, cultural and creative industries are by no means average contributors to economic growth. As stated by the Danish Minister for Business and Growth, Ole Sohn (2011), at a workshop on the Culture and Experience Economy, *experience economy* and *creative industries* as strategic areas [are] at

the same level as energy and environment and healthcare."[i] Notwithstanding the current global economic crisis, the long-term value of cultural industries has managed to sustain their economic significance. Dominant economies, such as the UK, France, Germany, Belgium, and Spain, [as well as the U.S] are the earliest ones to use culture [mainly through museums] as the base for innovative industry.[ii] France begun 'as early as the 1950's and 1960's by integrating originally independent museums of all sorts, including the Musee d'Orsay or the Musee d'Art Moderne de la Ville de Paris, and running museums with new operative methods, such as the Museum National d'Histoire Naturelle.[iii] Germany also has promoted the relationship between communities and museums; the German Commission for UNESCO (2007) reported that, 'In Germany the creative industries achieved a gross value added of EUR 58 billion in 2004. This equals a share of 2.6% in the Gross Domestic Product. In 2004 turnovers grew by 4.4% compared to the previous year; this is three times higher than the overall growth rate of all economic sectors in Germany. For the UK, in the period 1997-2003, for instance, output of the creative industries, measured as value added, grew at six percent per annum, compared to 3 per cent growth for the rest of the economy while employment growth grew at a rate of 3% per annum compared with 1% for the whole of the economy (DCMS, 2005). Estimates are that the creative economy is growing annually at 5% per annum and is likely to triple in size globally by 2020 (Howkins, 2001).

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Within the changing trends of recent years towards globalisation, - as well as the advent of stable governments, especially in developing African economies, there has evolved a more substantial appreciation for cultural experiences - as not only psychologically enriching or innovatively inspiring but economically profitable and preferable to other forms of economic growth. This is largely due to the fact that current growth within African economies still face several challenges and the various industries do not seem to be making a significant impact on overall national development. There are pre-existing and developing strategies to address

this issue of cultural development in several African states, amongst them South Africa. In 1997, the South African Department of Arts and Culture, created the lead project, Cultural Industries Growth Strategy (CIGS) to help realise the potential of a number of key cultural industries. In CIGS, the term cultural industry was used to refer to different types of cultural expression, which are embedded with symbolic meaning as highlighted by the UNESCO definitions (UNESCO, 1982). This definition includes what have been called the 'classical' cultural industries – broadcast media, film, publishing, recorded music, design, architecture, new media – and the 'traditional arts' - visual art, crafts, theatre, music theatre, concerts and performance, literature, **museums and galleries** – all those activities that have been eligible for public funding as 'art' (O'Conner, 1999).

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It is clear that increasingly, cultural industries are becoming preferable routes towards national development because of their capacity to ensure independent economic growth and sustainability of socio-cultural values. It is also evident that the museum functions as a central anchor within this industry. Museums are agents for the dissemination and promotion of culture; museums have hence become synonymous with cultural tourism and also the concrete achievement in the promotion of the cultural industry and for this reason they play a key role in the development of the culture industry.

1.2 RESEARCH ISSUE: THE NATIONAL MUSEUM OF GHANA

In Ghana, there is increasing advocacy for creative [and cultural] industries to feature more prominently in reform strategies as in other developing African countries. One of the positive impacts accredited with cultural industries is that of the promotion of a cultural and creative identity. Recent studies by the African organisation, Arterial Network have addressed the role of cultural industries within developing African economies including Ghana. As stated in a

keynote address on the need for the industry's development, '…we challenged to project our perspectives into the global market of ideas, to have a creative voice that will speak our stories, assert our perspectives, share our values through creative products.' (van Graan, 2011)

Increasingly more and more African museums and cultural exhibition centres are gaining prominence as places of public interest. The Ghana National Museum has been selected for this study due to its status as a key public centre for raising an awareness and interest in Ghanaian culture, arts and traditions. It is the oldest and largest of the six (6) museums under the administration of the Ghana Museums and Monuments Board[1c] as well as one of the oldest museums in West Africa. The Museum was inaugurated on the eve of independence and symbolically wielded political influence in raising a national consciousness. Its function, as such is to serve as a recognised and patronised centres for the exhibition of cultural and national heritage and the promotion of the 'arts and craft' development in Ghana. However, this cannot be achieved without a broader appreciation of the need for a *redefined* role of the Museum in a presently evolving national and global economy, in particular assessing the significance of various user interactions in order to enhance and maximise the museum experience for an increased participation. Although some user interactions may not be easily discernible or determined, the focus is drawn here to those interactions that will fall within the realm of design control. The study of the Museum[iv] promotes the broader issue on the development of design solutions for existing buildings today. A huge part of the challenge for the revitalization effort today lies in allowing its architecture to reflect the value of this trajectory and more importantly to respond to the changing image of the Ghanaian nation (Lokko 2011). Although it is clear from the external facade of the Museum that it was designed with a vision of projecting an authentic cultural and national identity, it is important

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to note that the overall experience constitute an appreciation of the museum construct as well as a connection to the exhibition that creates an *experience*. It is the visitor experience that must be privileged over the design of '*beautiful objects*'. As such, in spite of its external architectural and aesthetic value, the issue of sustaining public interest ***within the museum space itself*** must be addressed. As such, in addition to the focus on new museum developments, this research is also a contribution to the study on museum redevelopment, in particular to address the needs of the Ghana National Museum. The study is designed to be useful to museum professionals, decision-makers as well as institutions responsible for museological planning in order to reform the image of the museum into a distinct symbol of a culture and tradition that is capable of evolution and sustainability and to further serve as basis for discussion of cultural transformations and impacts.

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1.3 RESEARCH AIM AND SCOPE

The study is generally aimed at widening the scope of research and understanding of the functions of museums in developing cultural industry. Public advocacy for development of the cultural industry has begun to effect changes in government reforms (Addo 2010). The increasing level of public interest is gradually highlighting the need for improvement and redevelopment of public spaces such as museums and other cultural exhibition spaces. In particular, the study aims to outline and develop spatial reform strategies as a design model in a proposal for the design of a National Museum through a focus on The Museum.

Audience development is another key issue - marketing museums to the previously disadvantaged community has never been addressed and the museum buildings are not welcoming (Chikukwa 2009). As such, the study also aims to provide an understanding of how the enhancement of public participation is influenced by the presence of multi-social

interactions. It seeks to introduce the concept of 'social spaces' in museums, using the method of *socio-spatial* analysis as introduced by Hillier and Hanson (1984) in urban developments.

Lastly, the study aims to contribute to the creation of a broader database on museum development in Ghana, to serve as a resource for museum professionals and designers. Field research specifically focused on the exhibition hall of the Ghana National Museum.

1.4 RESEARCH OBJECTIVES

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The research study seeks to:

- Identify the user interactions developed within the exhibition space.
- Examine these interactions and compare with selected studies on visitor interactions within other museum spaces.
- Ascertain the impact of user interactions on user participation and experience.
- Identify and analyse the translation of these interactions into spatiality within the museum

1.5 THEORETICAL FRAMEWORK

The research is mainly concerned with the issue of reshaping and enhancing the museum experience by specifically analysing various user interactions that develop within museum exhibition spaces and comparing these against social interactivity experienced within the Ghana National Museum. These baseline studies will provide a basis for further examination of the parallels between interaction and experience while analysing their connection with the exhibition space. To serve as a guiding framework for the research, the user interactions will be broadly categorised into three groups as:

- User to user interaction - social interactions
- User to object/artefact interaction - exhibit interaction
- User to space or spatial construct interaction - spatial interaction

Of the three interaction groups, the first two will be classified as relatively discernible and determinable. It is as such observable and would fall under observation studies. The third interaction however, is an involvement of the user's subconscious reaction to/within **space** (the psychological effect); as such it is considerably more opaque and complex to examine by observation alone. This will therefore fall under a more participatory study involving both self-examination as well as selective interviews to obtain user-reactions that are not translatable through mere observation and must be sourced directly from sample respondents.

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1.6 RESEARCH METHODOLOGY AND QUESTIONS

The study employs the use of a qualitative approach to data collection and analysis, using a combination of participatory observation studies and selective interviews. Ghana National Museum provides the ideal case study for implementing such a proposal, in a large way due to its contextual significance and museum management's concession to a need for such a redevelopment of programmes and space.

The research will be aimed at addressing certain questions that form the key issues on visitor interactions within a museum space:

- What types of visitors are present within the museum?
- What are the kinds of interactions observed within the exhibition space?

- During which periods in the exhibition event were these interactions displayed?
- What effect did the exhibition space have on visitors and what were the kinds of behaviours, actions and movements that visitors exhibited within the space?
- How does the museographical layout of the exhibition affect the actions of visitors?
- How did visitors feel after the exhibition event?
- How did visitors characterise the exhibition event?

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1.7 RESEARCH STRUCTURE

Chapter one provides the background for the study and broadly communicates the intentions of the study on examining the visitor interactions within the museum space. It also outlines the guiding concepts and theories and provides justification for the study focus within the context of changing social and cultural climates.

Chapter two discusses the available literature on the subjects of museum experience, museum interactions and museum spaces. The material gathered for review covers both theoretical and empirical works on visitor behaviour within museums in order to uncover any research regarding socio-spatial museum interactions and determine the extent to which this issue has been addressed. Whilst providing detail to the existing theories that have documented similar concerns and aspirations to those explored in this thesis, this chapter offers extensive analysis and critique on the varied views of researchers and highlights the limited body of research focused on socio-spatial interactions within the museum space. The review is meant to give clarity to the issues the study addresses.

Chapter three discusses the methodology employed within the research. It introduces and defines the study field with the study domain, the Ghana National Museum. It defines the research approach to be used and outlines all other methods and tools for data collection and analysis. It also outlines all limitations and ethical considerations of the study.

Chapter four is a presentation of all findings from the study that are organised into various themes, graphs, tables and charts for further analysis. The findings of the study are then discussed in relation to the proposed theoretical framework to demonstrate the validity and relatedness of the results in addressing the subject issue of spatial design within museums.

Chapter five (5) is a presentation of the recommendations for the development of a New National Museum of Arts and Culture using the concept of socio-spatial design. It also discusses recommendations for redevelopment of existing museums, particularly addressing the Ghana National Museum. The report is concluded with a reassertion of the significance of continued research into both the development and redevelopment of museums in Ghana.

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ENDNOTES:

i Speech by the Minister for Business and Growth, Ole Sohn, to the EU commission experts at the workshop about Culture and Experience Economy, December 8th, 2011, Copenhagen

ii INTERCOM conference on museums, 2008

iii INTERCOM conference on museums, 2008

iv The term 'the Museum' is used here and in subsequent chapters to refer to the Ghana National Museum.

CHAPTER 2

LITERATURE REVIEW

2.1 THE INDIVIDUAL EXPERIENCE

The word 'experience' can refer to two different states: the moment-by-moment lived experience ***'Erlebnis'*** and the evaluated experience ***'Erfahrung'***, which is subject to reflection and prescribed meaning ((Boswijk et al, 2007; Highmore, 2002). A look at earlier research by Dewey (1938) reveals the origin of this theory on the two states of experience and its line of continuity. Hennes (2002) comments:

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"In the Deweyian universe, normal life experience shifts unceasingly between two modalities. The first is the relatively unconscious experience of life as it flows continuously from one moment to the next as an uninterrupted stream. This kind of experience is that of walking along a familiar path in which nothing seems out of order and no particular attention need be paid to the surroundings. It is almost automatic. The second type of experience arises at the moment the normal flow is interrupted by something out of place, a passing thought, something that catches the eye, an event, or a change. This second type of experience was of greatest interest to Dewey, and should be to us as well. This kind of experience is where memory is formed and growth occurs." (Hennes, 2002)

On the general discussion of an individual's experiences, O'Dell (2007) argue that experiences are subjective, intangible, continuous and highly personal phenomena. Pine and Gilmore (1999) express the view that individuals experience similar activities and settings in different ways.[1] Hennes (2002) opposes the opinions shared by Pine and Gilmore (1999), describing their definition and appreciation of experiences as that for a "saleable commodity" (Hennes, 2002). He argues that this definition forms the core issue since it supports the

notion of experiences as "guided transformation" where customers are merely scripted actors. These variations in definition confirms Uriely's (2005) assertion of specific shifts in research on the experience phenomenon. However, a review of the various developments of the tourist experience literature can help achieve a clearer understanding of the dynamic nature of the experience phenomenon (Cutler and Carmichael, 2010) for the purpose of effective study on the subject. Such a definition must also provide discernible characteristics of the museum experience which makes it possible to identify and evaluate the issue in further studies.

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2.1.1 DEFINITION OF THE MUSEUM EXPERIENCE

The concept of the museum experience is foundational and core to this study, and must be carefully analysed in order to understand its theoretical framework and enable an analytical discussion of its characterising features. Some research studies point out that providing a succinct definition of any visitor or tourist experience is a difficult task as this can encompass a complex variety of elements (Jennings, 2006; Selstad, 2007).[2] Jennings (2006) suggests that due to the highly subjective nature of the visitor experience, it can only be interpreted by reflecting on the specific individuals involved and the specific settings where experiences take place. However, Shen and Chen (2010) acknowledge the importance of clearly defining the visitor experience. Although a clear definition might narrow visitor experience, the operation can become easier; thus, measurement tools can be developed and modified (Shen and Chen, 2010). In deriving an understanding of what is meant by the museum experience, Falk and Dierking (1992) comment:

Ask a museum professional to describe a museum, and most likely he or she will describe the collections, the educational programs, or the institutional history. Ask the visitor, and likely as not he will mention none of these. Instead, visitors will say: "It's a nice place to take children to show them their heritage," or "The museum is a wonderful place to take out-of-town visitors. It's interesting,

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inexpensive, and fills up a day," or "The museum is a quiet place where I can escape from the work-a-day world." (Falk and Dierking 1992)

This outline generally sums up the various expectations of the visitor and describes the museum experience as a collective, made up of aspects of both curatorial and public desires.

Falk and Dierking (1992) state that, *'the visitor's perception of the museum is functional because he is a user, not a planner or insider. His view is not limited to an intellectual discipline or to individual exhibits or objects; rather, the visitor's perception is highly contextual, including the personal, and social contexts. The visitor's experience must be seen as a whole, or gestalt.'* In other words the museum experience as determined by its 'user', is a combination of the personal and surrounding factors, which put together accomplish the creation of meaning for the museum user.

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In their research on the experience economy, Boswijk et al (2007) explain that experience is more than just 'excite me', 'feed me' and 'entertain me' where the visitor is regarded as a passive 'receiver'. They build on Dewey's second state of experience, ***'Erfahrung'*** as being the more important of the two within the experience economy, stating that:

'Experience in the sense of Erfahrung is a continuous interactive process of doing and undergoing, of action and reflection, from cause to consequence, that provides meaning to the individual in several contexts of his life. Experience as Erfahrung causes the individual to change the perspective on self and/or the world around him.' (Boswijk et al, 2007).

Stamboulis and Skayannis (2003) define the tourist experience as an interaction between tourist and destinations, with destinations being the site of the experience and the tourist being the actors of the experience. Although the term 'tourist' is used within the definitions, Sheng and Chen (2010) believe that the tourist experience in these studies is similar to visitor experience in museum studies since tourism (which includes cultural tourism industries such

as museums) has an experiential and emotional nature (Trauer, 2006), and as such qualifies as a valid definition of experience. Selstad (2007) continues the line of argument put forward by Stamboulis and Skayannis (2003) by defining the tourist experience as a novelty/familiarity combination involving the individual pursuit of identity and self-realisation. These definitions all suggest that the visitor is an active and conscious participator in the creation of the experience, and that the experience itself is as a result of some 'action' by the visitor. The conclusion derived is that experiences are human products. This builds on Li's (2000) observation, which stated that the only thing common to all the varied definitions of the visitor experience is the presence of significance for the individual.

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Although the definitions all share a common view on the aspect of involvement of the visitor (Boswijk et al, 2007; Falk and Dierking, 1992; Selstad, 2007; Stamboulis and Skayannis, 2003), only Boswijk et al (2007) pursue the issue of the visitor attaining meaning from the experience; while it is true that Stamboulis and Skayannis (2003) also point out the 'pursuit of identity and self-realisation', this still does not capture the aspect of multiple meanings that 'cause the individual to change the perspective on self [as well as] the world around him' (Boswijk et al, 2007). This indicates that the museum experience permits the creation of social as well as personal change.

While Cutler and Carmichael (2010) observe that most of these definitions refer to the experience at the destination, there is also much research to support that the definition of the museum experience also encompasses more than just the experience involving the exhibition event (Clawson and Knetsch, 1966; Falk and Dierking, 1992). In defining the total extent of the museum experience, Clawson and Knetsch (1966) suggest that the experience of a tourism event begins before the trip in the planning and preparation phases and continues after the tourist returns through the recollection and communication of the events which took

place. Falk and Dierking (1992) also support this notion of the broader extents of the museum experience. They state that on the day of the visit, the experience already begins with the initial decision to go to the museum, followed by the experience of the ride to the museum, locating suitable parking, locating and circulating through main exhibition accesses, navigating through visitor crowds, the experience inside the museum involving the exhibits, conversations with family, friends and other visitors, as well as lunches and snacks while at the museum and finally the post-visit memories which can by jogged by related words, events or souvenirs purchased at the museum. Recollection of a single one of these incidents may be sufficient to allow recall of all of them (Falk and Dierking, 1992). Both views however, agree that the main phase is the experience within the exhibition space. This phase forms the focus of this study because it serves as the stage for various interactions the study aims to capture. As such, the scope of this research is defined as the experiences observed within the exhibition space of the museum.

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Although Sheng and Chen (2010) comment that Falk and Dierking (1992) do not clearly define the meaning of the visitor experience, they acknowledge that the proposed interactive experience model (Falk and Dierking, 1992) is a key conceptual tool that has led to further studies on the visitor's interactive experience (Sheng and Chen, 2010). Falk and Dierking (1992) proposed the application of the interactive experience model, with its emphasis on the interaction among personal, social and physical context.

2.1.2 CHARACTERISTICS OF THE MUSEUM EXPERIENCE

Various developments in research capture the different levels of characterisation attributed to the human and museum experiences. The interactive experience model of Falk and Dierking (1992) was one of the earliest attempts to create a concept model that visualised the museum

experience. Boswijk et al (2007) also discuss the characteristics involved in creating human experience. Pine and Gilmore (1999) outline the existence of active and passive tourist experiences, explaining the factors involved with each type.

2.1.2.1 THE INTERACTIVE EXPERIENCE MODEL

'The key is to create an environment in which the visitor becomes part of a seamless array of mutually reinforcing contexts which separately and collectively support the museum goals. In such a scheme, the museum professional would create not only exhibits and programs, but also museum experiences.'

(Falk and Dierking, 1992)

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In characterising the museum experience, the interactive experience model of Falk and Dierking (1992) as depicted in Figure 2.1 is visualised as a three-dimensional set of three interacting spheres making up the personal, social and physical contexts. Falk and Dierking (1992) theorise that each of these contexts is continuously being constructed by the visitor, and the interaction of these create the visitor's experience. This constructed reality is unique to the individual; no two people ever see the world in quite the same way (Falk and Dierking, 1992). In this sense, there are variations within constructed realities even for the most similar individuals, for example between visitors that share similar hereditary traits: twin siblings. Three people standing in front of an exhibit will each have a different experience.[2] Falk and Dierking (1992) point out that the museum experience is determined in many ways by what activates and captures the visitors attention.

'Whatever the visitor does attend to is filtered through the personal context, mediated by the social context and embedded within the physical context.' (Falk and Dierking 1992)

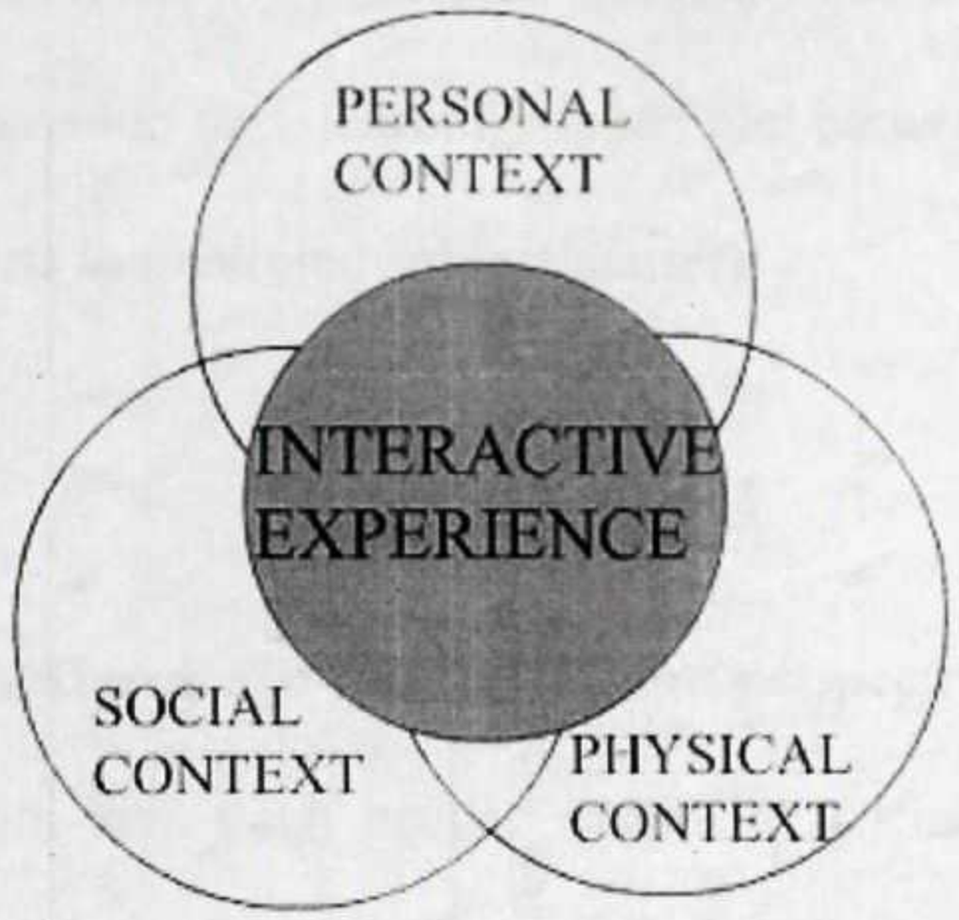

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Fig 2.1: The Interactive Experience Model

Source: Falk and Dierking (1992), The Museum Experience

As such, the personal choices that the visitor makes forms a crucial part of forming the museum experience. Falk and Dierking (1992) use this understanding to distinguish between a potential museum experience and the actual one, based on the level of the constructed experiences the visitor achieves. Pine and Gilmore (1999) later also expound the existence of active and passive experiences of tourists based on their level of interaction. Therefore how do the three different context affect the visitor experience? And to what extent must they each contribute to the formation of the actual museum experience? Falk and Dierking (1992) give further understanding to these issues of the nature and composition of the 3 contexts.

i. ***Personal Context***

The personal context incorporates a variety of experiences and knowledge, including varying degrees of experience in and knowledge of the content and design of the museum. It includes the visitor's interests, motivations, and concerns. These characteristics mean that each person arrives at the museum with a personal agenda - a set of expectations and anticipated

outcomes for the visit. Differences in personal context should help predict many of the differences in visitor behaviour and learning (example between first-time and frequent visitors or novice and experts in exhibited subject matter).

ii.*Social Context*

Falk and Dierking (1992) acknowledge that the visitor's perspective is strongly influenced by social context. The museum visit itself occurs within the social context. Visitors come in contact with other visiting groups and those who visit alone also invariably come into contact with other visitors and museum staff; there are also the interactions that occur with museum staff and volunteers. The museum experience as such is seen to differ depending on the company one has with them. Factors that affect the social factor are however not outlined in the discussion.

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iii.*Physical Context*

The museum is a physical setting that visitors choose to enter. It includes the architecture and feel of the building as well as the objects and artefacts contained within. Visitor behaviour, observations and memories are strongly influenced by the physical context. Many of the distinctions between types of museums derive from elements of the physical context that exert significant influence on the visitor. Falk and Dierking's (1992) explanation here agrees that there is an aspect of 'presence' created by the museum's spatiality that affects the experience of the visitor.

On the three contexts discussed, it is clear that the visitor involvement is key to shaping the individual and integrated nature of the experience model. However the model does not indicate the degree of involvement from all three contexts, simply that they function as an

integrated whole although they can be viewed separately. It also does not indicate the effect that each context has on the other - the interaction, such as the effect of the physical context on the social context, which in turn affects the personal context. For example, the effect that museum spaces can have in attracting visitor populations, which in turn affects the visitor's personal perception or view of the museum.

While acknowledging the usefulness of this model as a design tool, Sheng and Chen (2010) argue that Falk and Dierking (1992) did not give detailed study to the possibility of finding common experience traits occurring in multiple visitor experiences, such as is found in Boswijk's et al (2007) research. The research of Boswijk et al (2007) assert that key to characterising any experience, it is important that one recognise that experience is essentially a form of behaviour. They suggest that while being intangible in nature, experiences occur in a process in which interactions take place in a certain setting - whether or not the interaction is a physical one. They conducted a survey research of over 300 people[2] and asked the following question in order to determine what forms an individual's experience:

1. which experiences changed their life?

2. which experiences in a context with other people will they never forget?

3. which experiences will they never forget that were paid for?

Boswijk et al (2007) revealed in their findings that each answer contained deep personal. social and cultural contexts accounting for the experience. However, since extensive data on findings and results were not documented in the research, the degree of involvement of each context cannot be evaluated. The study simply determines the presence of personal, social and cultural forces involved with creating experiences. They suggest that (any) meaningful visitor experience must satisfy certain key characteristics which (Boswijk et al, 2007) generally outline as follows:

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1. There is a heightened concentration and focus, involving all one's senses.
2. One's sense of time is altered.
3. One is touched emotionally.
4. The process is unique for the individual and has intrinsic value.
5. There is contact with the 'raw stuff', the real thing.
6. One does something and undergoes something.
7. There is a sense of playfulness
8. One has a feeling of having control of the situation.
9. There is a balance between the challenge and one's own capacities.
10. There is a clear goal.

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The application of this set of characteristics for human experience within the context of museum experience shows that most of what make up the museum experience for any visitor must be made up of these traits of human behaviour and senses. These characteristics also support Ryan's (2002) observation that at the core of (all) experiences is perception.[4] Boswijk et al (2007) also note the presence of personal and social contexts, but include the aspect of cultural context as part of what accounts for the experience created. However, they also fail to capture the degree of involvement of each context, individually and on the other. Neither Falk and Dierking (1992) nor Boswijk et al (2007) discuss or point out the aspect of visitor interactions or the effect that it has on creating the museum experience. Boswijk et al (2007) do form the conclusion that meaningful-experience concepts cannot take place without the direct participation of the (potential) customer. To some level, the direct participation may refer to an individual's interaction within the experience setting. Yet at the core of these various descriptions of characteristics, there is sufficient literature to support the aspect of a multi-layered, interconnecting nature of the experience phenomenon. The studies also support the aspect of change that the experience carries with it which causes the individual and/or his

surrounding environment to undergo a certain degree of transformation; some aspect of knowledge is also acquired that may hold multiple meanings for the individual.

In her research regarding the usage of theatre in museums, Liu (2008) uses the interactive experience model of Falk and Dierking (1992) to probe into the interaction between visitors and museums, as well as the effect on visitors' learning. She suggests the way in which visitors' participation could enhance their learning. She notes the significance of visitor participation in enhancing learning. Participation is important, and when visiting museums, visitors could be prepared for active participation. For instance, before the visit, they could absorb information and prepare notebooks. They could also wear comfortable clothes and shoes when visiting. Relaxation is particularly important for visitors who rarely visit museums, therefore, more participation during their visit would enrich their experience. This study supported the inclusion of a form of theatre in which visitors can participate (Liu, 2008)[2]. Participation here could refer to a kind of visitor interaction that involves interaction with the museum exhibition itself as well as with other participating visitors.

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2.1.2.2 THE MODEL VISITOR AND THE MODEL USER

Bollo and Pozzolo (2005) go on to discuss the distinction between the Model Visitor and the Model User. They describe the Model Visitor as being the one the curators have in mind when they set up an exhibition or a visit, and for whom they work out their communication strategies using the grammar and syntax that are peculiar to exhibition arrangements. The Model User is the result of the actual encounter with the institution and of the way it helps predetermine usage. In other words, the Model Visitor who enters the exhibition space without any familiarity with the exhibition evolves into the Model User whose interaction with the exhibition event depicts the way in which it was experienced by the visitor and the extent to which it brought meaning to the individual. As such, the knowledge that visitor

acquires upon leaving the museum's exhibition comes from the "interactivity" of the experience (Bollo and Pozzolo, 2005).

2.1.3 TYPES OF MUSEUM EXPERIENCES

2.1.3.1 ACTIVE AND PASSIVE EXPERIENCES

According to tourists' involvement - active and passive, active experiences was divided into educational or escapist active participation. The tourists actively participated and were involved in situations, and they created varied experiences in the process. Passive tourist experiences include aesthetic or entertainment experience. These tourists have experiences using the varied aesthetic or entertaining activities "provided". Pine and Gilmore (1998) indicated that active and passive experiences could co-exist. In other words, there is interaction between tourists and various systems. When tourists accept materials "provided", they can actively participate in and form the experience during the visit. Thus the tourists would have active experiences. These types of experience also point to the presence and involvement of visitor interactions - here, it is between the visitor and the museum exhibition.

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2.1.3.2 POSITIVE AND NEGATIVE EXPERIENCES

Although the phenomenon of positive and negative experiences are not indicated by Pine and Gilmore (1998), the existence of positive experiences leads to the assumption of the existence of a negative counterpart as well. The model provided in Figure 2.2 supports the existence of positive and negative experiences of tourists. The model broadly captures the various phases involved in building the tourist experience which leads to either a positive bond formed with the destination or a negative impression of the experience.

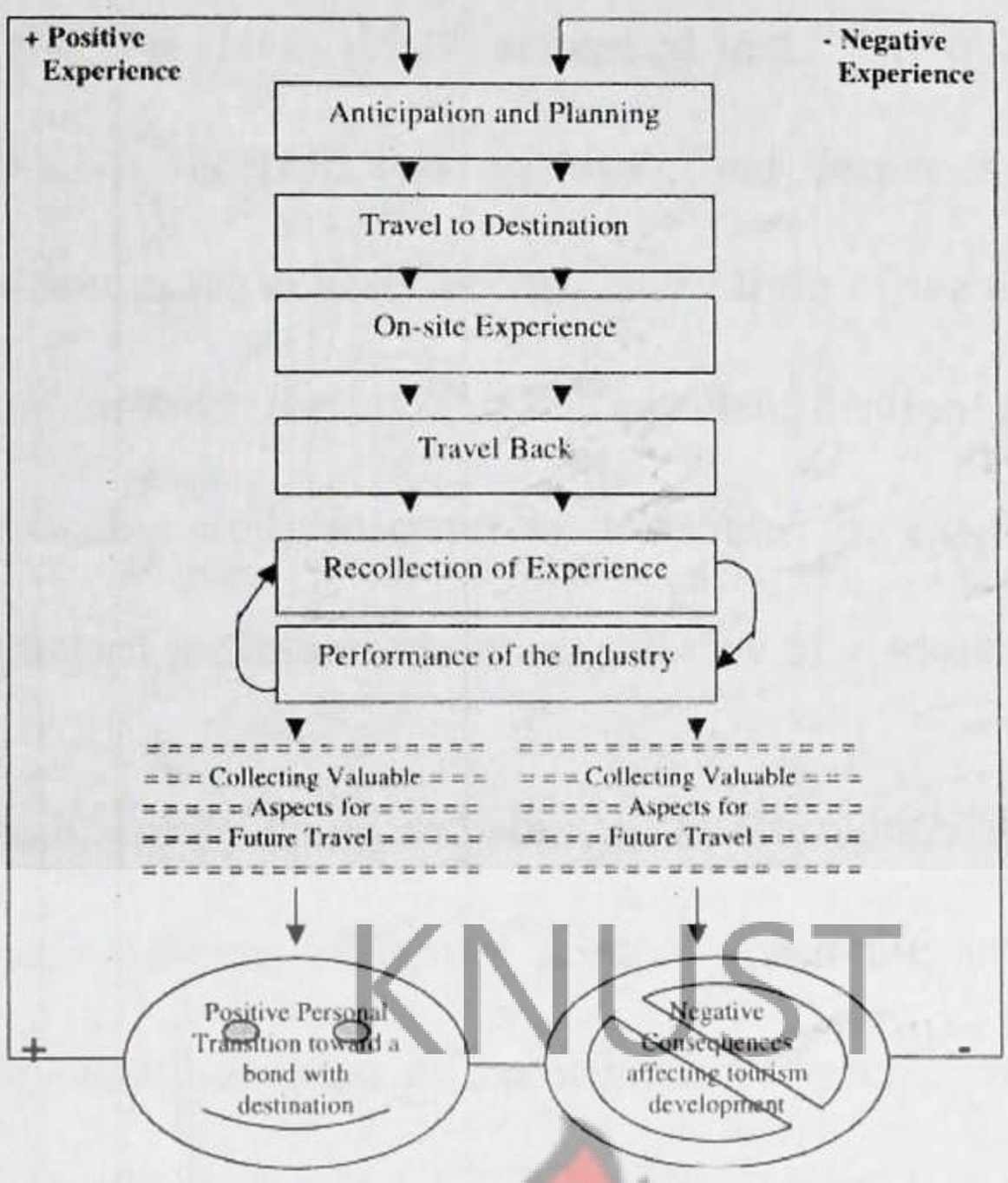

Figure 2.2: Model Depicting Positive and Negative Experiences

Source: Li (2000) Annals of Tourism Research

2.2 MUSEUM INTERACTIONS

Exhibits are environments in which complex interactions occur among visitors, objects, environment, and meaning. They are places of experiences as unpredictable and idiosyncratic as the individuals who visit them (Crane et al. 1994; Roberts 1997; Hein 1998; Falk and Dierking 2000).

The museum experience is divided into three contexts, personal, social and physical.[1] Falk and Dierking (1992) refer to the process of constructed realities where the visitor creates his own unique museum experience through the formation of each context. However, there still remains the question of what processes are responsible for creating each of these experiences. Do each of these contexts correspond to a particular visitor behavioural pattern? How do interactions undertaken by the visitor account for the creation of each context? This goes beyond the discussion of Falk and Dierking (1992) on the general interconnection that the

three contexts share. Lehn and Heath (2007) remarked that, "The quality of an individual's experience at an exhibit has received less attention, and despite the growing interest in situated learning and collaborative action, we still know little of the conduct and interaction that arises at, with and around the exhibit." The identification and analysis of these interactions is relevant to this study in order to determine the extent to which social and physical encounters impact on the total museum experience of visitors.

Field study research conducted by Cone and Kendall (1976) which aimed at uncovering the differences in behavioural patterns of family groups within the anthropology hall of the Science Museum of Minnesota recorded different kinds of 'interactive actions' by observing their movement and interactions. Table 2.1 is a summary record of the findings from their study. They observed 'verbal actions' of reading, explaining, asking questions, disciplining and pointing; they also observed 'motion actions' of leading, separation and rejoining of the group. Although each of these actions is categorised separately, it is clear from their study that:

- the actions occurred during interactions involving person to person, person to exhibit and person to space.
- the observed actions were mainly social in nature.

Due to the family nature of their sample respondents, the most recorded actions were that of questions and explanations, which mostly occurred from parent to child. The role of social engagement in this case between parent and child is one of impartation, and the child's interpretation of the exhibition is affected to a large extent by the information received from the parent. In this case, the parent influences the museum experience of the child. Although the interaction here is one-way, i.e. from a supplier to a receiver, it can still be described as a social interaction. It was also observed that out of the 'motion actions', a greater percentage

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(25%) involved separation of younger members from the family unit. This implies the need for self-exploration and other forms of interaction by the child. This allows the child to create a personal or unique experience, which is largely devoid of parent involvement or interpretation. There is a further interaction involved in this case that deals more with the child's own spatial exploration through the museum and his/her encounter with exhibition objects; however, this is not clearly articulated by the research. Although there are clear identifications of typical 'action and movement patterns' involved in visitors' interactions, the research does not draw any definite conclusions as to the type of interactions experienced; also since it specifically focuses on a particular type of museum visitors, it is difficult to generalise their findings for the broader visitor populations. It is therefore necessary to broaden the examination of interactions to involve a wider sample range.

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Table 5—Types of Family Interaction

Type of Interaction	Number of Incidences Observed	%	
Reads aloud	43	8	
Explains	70	14	40% verbal
Questions	52	11	
Points	34	7	
Disciplines	19	4	
Separates	123	25	
Rejoins	84	17	56% motion
Leads	72	14	
Total	497		

N = 68 family groups

Table 2.1: Various types of interactive behaviour depicted by families

Source: Cone and Kendall (1976) Space, Time and Family Interaction

2.2.1 SOCIAL INTERACTIONS

Rather than being defined by the organisation of the exhibition space, the success of museums and galleries is measured by the numbers of visitors they attract. (Psarra, 2005) This statement agrees with earlier research by Falk (1988) stating, "museums, especially for family groups, are first and foremost, social environments" Although it is now widely acknowledged that social interactions are a necessary part of the museum experience, there is very little research that has looked specifically at examining these interactions. Lehn and Heath (2007) state that, "Indeed it is increasingly recognised that communication and interaction provide the foundation to learning in informal environments such as museums and galleries, and yet the interaction between visitors, both those that are with others and those who just happen to be in the same space, remains surprisingly neglected." Debenedetti (2003) also comments that, "As research into cultural audiences increases (Evrard, Bourgeon and Petr, 2000), and as cultural venues themselves show ever more interest in their publics, the absence of work addressing the social nature of cultural outings is becoming more problematic." Debenedetti also observes that the few available studies on the social aspect of the museum experience consider only family-type visitors (Cone and Kendall, 1976) and parent-child interactions (Falk and Dierking, 1992) as if the museum did not constitute a distinct social environment for other types of groups (Debenedetti, 2003). However, Debenedetti also concedes that the more general question of social interaction in museums (most often among companions) has been the subject of numerous studies, with many authors agreeing that social interaction is a primary factor in visitors' motives and satisfaction (Dierking, 1994; Falk and Dierking, 1992; Gottesdiener, 1992; Goulding, 1999; Hood, 1983, 1994; Prentice, Davies and Beeho, 1997; Rasse, 1999; Silverman, 1995; Thyne, 2001; Tian, Crompton and Witt, 1996).

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There are handful of studies that aim at identifying the presence and significance of social interactions within museum spaces.

Some studies apply research methods based on an indirect approach to the subject. For example, in identifying the type of interactions that take place within museums, Boehner et. al (2005) conducted a survey to ascertain the kinds of feelings or activities that visitors associated with the museum. They applied a simple two-question interview to selected visitors; the first question was as follows:

1. "If there were no museums, what would be missing?"

'A content analysis of the first question identified three categories of responses. Out of 31 responses, 27.3% said that without museums we would miss the art itself, for example the visual interaction with an object to scale. 24.2% would miss the information about art, such as the historical context and the curatorial point of view. In the final category, 48.5% cited the shared space, the experience of being involved, and expressions of community and interconnectivity as critical aspects of museums' (Boehner et. al 2005).

This final category of responses from visitors proves the existence of social forms of interaction within museums, how integral the act of social interaction is to the success of creating meaningful museum experiences for visitors. Social interaction ensures an information transfer that in some aspect is almost fuller than the curatorial information on the display. Individuals may bring their own past or present experiences with the exhibition into the dialogue. The research however did not categorise the responses based on nature of the respondents, i.e. visitor type (single or group visitor), age group distribution, etc.

In their exploration of other public activities associated with museum, Boehner et. al (2005) asked the second question:

2. "If you compared the museum to another public space, what would that be?"

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"When asked to create a metaphor for the museum, visitors offered a range of responses from commercial art galleries to civic agoras. The top two responses, accounting for nearly half the metaphors offered, were a library or bookstore (30% of responses) and a public park or garden (15% of responses). Although the library metaphor reveals a perception of the museum as an information source, comments regarding both the library and the public park identified a special type of sociality that did not require explicit social interaction. Visitors can have a private, individualized experience yet still be a part of a social, shared place." (Boehner et. al 2005).

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The research suggests the range of social dynamics at play within the museum space, where interaction may range from highly public to highly personalised or private. According to Silverman (1995), museums fulfil the human need for individuality as much as the need for community.

In their research summary, Boehner et. al (2005) conclude that:

"Taken together, these responses confirm that information transfer is a critical component of the museum experience, but they also reveal the importance of social awareness. Personalization is less directly accounted for, although visitors talked about having individualized experience within the context of a public place. This suggests an interesting tension between being public and private at the same time. These responses are especially interesting in light of the typical museum application of technology, which tends to be for information about the art, and promotes the private at the expense of the public."

Another research method depicts an experimental approach, by imputing external influences to study the reactions and responses of visitors. For example, to observe and test the dominance of the social context, an experiment was conducted where the research observer - playing the role of the model user placed himself within the exhibition event as part of a

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visitor group of 5 individuals. The test/sample respondents were classified as all other visitors within proximity of that area of the exhibition. A discussion was started within the group by the research observer based on knowledge of the display artefact in sight. It was observed that as the discussion began, participation gradually extended from researcher's group to include respondents outside the group. Several actions were observed during this social interaction ranging from an intense interest in the discussion to interest in the artefact being discussed. Newer interactions were started off as a result of the first one leading to break-offs from within the group into smaller visitor group segments. This observation shows the dynamic influence of social interaction in creating newer interactions within the museum.

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In their research on contingent participation of visitors, vom Lehn et. al report that, "Our studies demonstrate that social interaction forms a pivotal and a virtually unavoidable part of people's experience of museums. Visitors normally come and explore exhibitions together in interaction with companions and in coordination with other people who happen to be there at the same time. While participants explore the museum they are continually aware of and sensitive to each other's actions in the same space." (vom Lehn et. al, 2001) They express the view that ***'what'*** and ***'how'*** the visitor sees and experiences is as a result of their actions and interactions and cannot be predetermined by the design and arrangement of the artefacts (vom Lehn et. al, 2001).

They also comment on the fact that the 'exhibits are used and examined by people from diverse socio-demographic and ethnic backgrounds, of different age groups and with different educational biographies in highly complex and contingent social situations. This puts huge demands on exhibition designers to create artefacts that can be inspected and understood by a variety of people who just happen to be in the museum at the same time interacting with each other' (vom Lehn et. al 2005).

Lehn et. al conducted an experiment study (1999; 2002; 2003/04), using displayed exhibition objects and artefacts to observe and analyse the exhibit features and characteristics that facilitated social interaction and collaboration. They exhibited a number of exhibits, including "Deus Oculi" (1999), "Ghostship" (2002) and the "Universal Curator" (2003/04). The exhibition was accompanied by audio-visual research techniques to study the visitors' interactions involving the exhibited objects. This is was the report on their findings:

"The video-based studies of the craftworks reveal that they stimulate relatively long sequences of engagement and interaction in which people discover the functionality. The functionality is embedded in the relationship between spatially distributed parts of the exhibits. People discover the relationships between their parts by collaboratively exploring the pieces and by observing others' interaction with and around them." (Heath et. al 2002; Hindmarsh et. al 2005)

They also list the various forms of social interactions observed as a result of the experiment:

Social interaction and collaboration are critical for people's understanding of the craftworks; without interacting or collaborating with others people cannot discover the functionality of these pieces due to the physical distribution of their functional parts. We have observed different forms of interaction and collaboration at the exhibit. For example,

- participants produce relationships between exhibit features by virtue of verbal explanations accompanied by gestures and bodily conduct.
- participants coordinating their examination of different parts of the craftworks with each other.
- participants revealing the functionality between different parts of the exhibit by generating surprise and occasioning laughter.

- participants collaboratively producing their own exhibitions and creating stories that bring their pieces to life. (Heath et. al 2002; Hindmarsh et. al 2005)

Hindermarsh et, al however noted that the experiment failed the individual visitors who had difficulties in understanding the relationship between the different parts of the artefacts. They relied on a member of staff, the researcher, the artist or another visitor to step in and make the exhibit work with them.

The experiment studies conducted by vom Lehn et. al (2001) mainly highlight and draw on the relationship between the Model User and the Model Visitor, where the actions of the Model User (who may be staff, or a visitor with prior experience and familiarity with the exhibition or artefact) influence and inform the reactions of the Model Visitor. They conclude with a number of design sensitivities, which may inform the creation of methods and systems to enhance the visitors experience and appreciation of exhibits:

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- Recognising that social interaction is critical to people's experience of exhibits and exhibitions. They come with companions and meet others who happen to be there at the same time.
- Providing opportunities for sustained interaction with and around exhibits by offering resources for participants themselves to creatively shape and configure the experience of others, either by changing aspects of the display or by other means.
- Creating spaces for individual private participation with exhibits and providing individual visitors with resources to examine and make sense of exhibits designed for multi-parties. (Hindmarsh et. al 2005; vom Lehn and Heath, 2005)

In Figure 2.3 below, Debenedetti outlines the relationships that exist between the two main types of visitors - single and group. She notes how the intrinsic natures of the two groups can be influenced by certain kinds of interaction and argues that although typically the museum experience is 'perceived as an occasion for solitary, introspective meditation', it can also be 'intrinsically sociable' (Debenedetti, 2003). For instance, in the case of an 'occasional visitor' or even a 'non-visitor'[2] who often has little in the way of museum experience, the prospect of interaction or sharing the experience with companions - either old or new - could be an incentive to visit the museum (Debenedetti, 2003, p.60; author's translation). Debenedetti's hypothesis is confirmed by Hood's (1994) argument: "... If social interaction, to which he [the occasional visitor] attaches such value, is the smallest component, the occasional visitor will probably consider the overall experience not worth repeating" (Debenedetti, 2003).

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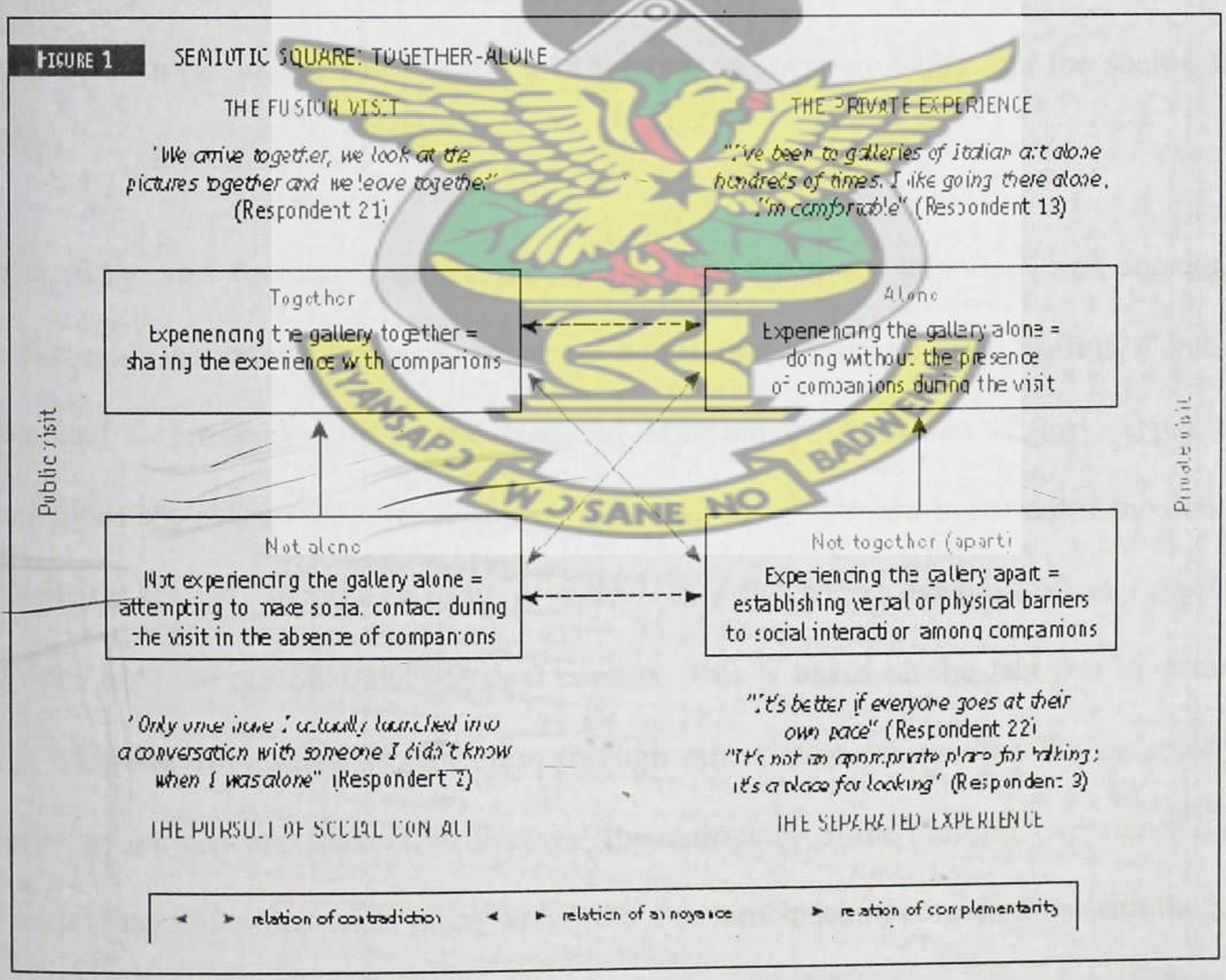

Figure 2.3: interactive behaviour between private and public visitors

Source: Debenedetti (2003) Investigating the Role of Companions in the Art Museum Experience

Debenedetti model supports the existence and significance of social interaction, stating that 'accompaniment is thus intrinsic to the museum experience. Using the Semiotic Square model of Figure 2.3, she proposes:

"...the overall museum experience should be reconsidered in terms of both its private and its public dimensions, favouring diverse uses of space to fulfil the multiple social needs of visitors. The space should be designed so as to address four modes of socially appropriating the museum, enabling visitors to pass at will from on pole to another: visiting together (the fusion visit), visiting alone (the private experience), visiting apart (the separated visit) and not visiting alone (the pursuit of social contact)." (Debenedetti, 2003)

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As such, Debenedetti confirms the significance of space in enabling the social interactive process. This leads the discussion into the aspect of *spatial interactions*, where Debenedetti's model is further explored and discussed in relation to socio-spatiality and the socio-spatial concept.

These views and research support the notion that the most important and memorable "interactions" that most visitors experience at a museums are social. Fath Ruffins, Curator of Home and Community Life at the National Museum of American History, states that, "Sometimes social interaction is almost as important or often more important than what you are actually seeing." In other words, in many cases the social dynamic of an experience overrides both the personal and physical context. This is based on the fact that humans are social creatures who share a connection through others. Notwithstanding the inclusions of 'technology gadgets and interactive displays', the main draw of the museum experience is still the social interaction that takes place within the museum space in combination with the main exhibition events.

2.3 SPATIAL INTERACTIONS

We cannot escape spatiality - we dwell, act and meet each other in space; it is our habitat.

(Hornecker and Buur, 2006)

The general concept of physical space is understood in terms of its dimensionality and morphology, with one conventional understanding of space being the composition of geometrical and structural properties (Hornecker, 2004) - a typical 3-dimensional entity. However, could this be all there is to the definition of space? This view of space being simply an independent entity was first set out by Descartes, when he argued that the primary properties of physical objects are their extension i.e. their measurable properties like length, breadth and width. These extensions are measurable, objective properties and are seen as free from secondary properties, which are properties that depend on human characterisation and interpretation such as 'green' or 'nice'. Hillier argues that space regarded in this manner does not display its true role in human affairs (Hillier, 2007).

Architecturally, Hillier believes that the commonest way to describe space is still by linking it directly or indirectly to human occupation or other forms of human intentions (Hillier, 2007). For example, the concept of spatial enclosure describes space by reference to the physical and human forms that define it rather than as a thing in itself. There are also such terms as the 'use of space', the 'perception of space', the 'production of space' which all point to the significance of space for human expression, use or behaviour.

Physical settings, whether simple or complex, evoke human responses in the form of feelings, attitudes, values, expectancies and desires, and it is in this sense as well as in their known physical properties that their relationship to human experience and behaviour must be understood (Proshansky, 1969). As such, the concept of space is never unlinked from human activity and agency (Hillier, 2007).

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In this sense, space is more than a neutral framework or background for social and cultural forms. Human behaviour does not simply happen in space; it has its own spatial form. Encountering, congregating, avoiding, interacting, dwelling, teaching, eating, conferring are not just activities that happen in space. In themselves they constitute spatial patterns (Hillier, 2007). In other words, space cannot be detached from human activity and function; these activities of social and cultural nature are what define a space and give it its form, meaning and purpose. Hornecker's opinion on space and place also supports this assertion, insisting that 'we seldom encounter and experience pure structural, geometric relations – real space is not an abstract, geometrical space of coordinates and lines, but a natural habitat filled with life' (Hornecker, 2005).

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It is also evident that the above-mentioned activities of encountering, congregating, avoiding, interacting, dwelling and conferring are not attributes of individual activity but of groups or collections of people. Hiller suggests that due to this, we should therefore, in principle, expect that the relation between people and space would be found at the level of the configuration of 'public' space rather than the individual space (Hillier, 2007). This is because individual activity does not include aspects like coexistence or correlation, and it is possible for it to function reasonably in almost any space, 'except for those of peculiar size and perhaps shape'.

Within the study of phenomenology, which is the investigation and description of all conscious experiences, there is a distinct difference between the understanding/appreciation of 'space' and 'place'. Casey (2003) argues that the concept of space is secondary to that of place. He argues that space is mute and blank and is a mere geometric extension, a void. He states that, 'there is no knowing or sensing a place except by being in that place, and to be in a place is to be in a position to perceive it'. This statement suggests that there is the presence of a unique relationship between our bodies and space. Hornecker (2005) confirms this view

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noting that our body is the central reference point for perception. Movement and perception are tightly coupled and we interpret spatial qualities, such as the positioning of objects, in relation to our body. This suggests the psychological quality of space. This means that our perception within a space or of a space is influenced by how we feel or how we are positioned within it. For example, feelings of vastness, enclosure or confinement, passage are all in regards to how we relate to the space. '*Place*' is '*space*' which is invested with understandings of behavioural appropriateness, cultural expectations and so forth. We are located in space but we act in place (Harrison and Dourish, 1996) As such, it is suggested that 'place' rather than 'space' should be the term used to describe those environments that people invest with actions, understandings, meanings and memories. A space that is occupied in this manner inherits any meaning given to it. Real spaces become 'place' when they are inhabited and situated (Hornecker, 2005). This concept gives significance to the need for social inhabitation in order for spatial interactions to take place. Real places also have an *atmosphere* as a result of the complex interplay of social, aesthetical, and physical factors.

In linking these spatial concepts and definitions of space to the discussion on museum spatiality and spatial interactions, the issue of where the museum space begins becomes relevant. Fleming (2006) poses the fundamental question: 'what do we mean by museum space? This definition is relevant to this study since the understanding of what constitutes the museum space would define the scope and physical extent of this research. According to Fleming, a museum space is the sequence of rooms, voids and bits in between that a visitor encounters having entered the museum. But museum space is also the physical environs of the building – the exterior of the building itself, and its immediate surroundings, whether this be a street, square, park or other public area, or even countryside (Fleming, 2006). Fleming's definition encompasses the broad environment of the total museum site, and while this may be true, for the purposes of this research, a distinction is made between the 'internal' and

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'external' museum space. Exempting the external space from the scope of this research will enable more focus on identifying and analysing spatial interactions within the exhibition area.

Within the museum, Thompson (1990) suggests that the physical space includes all those things, which the visitor can experience with his/her senses - visually, auditorially and kinesthetically. They may be architectural treatments of space, to the directional signage and the characteristics of the exhibits placed within the space. Museum spatiality can be seen to involve all these aspects. Also, spatiality within the museum can take on multiple functions and significance. Over time, museum typologies that have evolved have slowly shifted from a practice of mere display to attempting to create and/or recreate an *atmosphere* that serves to enhance the authenticity and inherent value of the display content. This is seen as creating a 'place' as suggested by Hornecker (2005). Bollo and Pozzolo (2005) also draw attention to the way in which the museographical arrangement of an exhibition, i.e. the layout, the density of the objects on display, the communication and exhibition methods can affect various visitor behaviour, interactions and participation. Common to all of the descriptions is the way museum spatiality both affects and is affected by social use.

This discussed notion of inhabited and geometrical space is perhaps most witnessed in Libeskind's Jewish Museum in Berlin, where the transformation of geometrical space into inhabited space by the user creates relevance and echoes the significance of the exhibition message. In this case, the exhibition space itself acts as the exhibit, a form of psychological re-enactment as the almost bare planes, surfaces and dominant volumes prompt users to recall the destruction of Jewish life in Germany by National Socialism and the Holocaust. Reid observes that 'by using a minimum [number] of exhibits in this area, not only is this sense of human and cultural destruction heightened, but it also avoids reusing the graphic images of concentration camps, to which many people have unfortunately become desensitised' (Reid,

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2001); he also makes reference to Blumenthal's belief that [the space] "provides opportunities to enhance the impact of our exhibition [...] and to dramatise it by moving the visitors from a high to a low and back again - from the glorious to the ghastly, and to show the thin line between the two". However, the significance of this space becomes meaningless without user appropriation.

It is clear now that museum spatiality is made up of those physical aspects that the visitor encounters by sight, sound, touch and that a museum exhibition is given meaning in the way its visitors react and interpret this spatiality. However, there is still the need for a clear identification of how spatial interactions are created. Hornecker (2005) believes that these spatial interactions are observable. They involve some manner of physical/bodily motion - either of one's self or directed at the exhibit (i.e. manipulation, movement, gesture). They also involve a physical relationship with other visitors within the same space. Thompson (1990) earlier proposed that spatial interactions can be understood through an observation of how visitors experience the museums by:

- accessibility
- the ambient environment (including distinct acoustic, thermal and visual elements)
- the circulation route
- the relationship between architecture and exhibits
- spatial relationships
- symbolic variables (including building configuration, spatial configurations, materials, the nature of illumination, color and the non-visual environment)

Although aspects such as accessibility and circulation have clear significance, some of these categories such as 'spatial relationships' are still extremely vague and open-ended. This categorisation only generalises the aspect of bodily motions that is suggested by Hornecker

(2007). What can be summarised from these two is that it is possible to examine spatial interactions through observation. While Hornecker observes that the differences in configurations of space support different kinds of visitor behaviour, she also admits that little is known beyond this point and only very few research has been attempted on the subject of varied spatial interactions.

Regardless of the different definitions and distinctions, it is clear that the museum space must possess relevance and meaning; therefore is defined not only by the nature of the physical arrangement but also by the social activities that takes place within it. For museums, where relevance is really a curious mixture of both 'reflective' and 'projective' purposes, creating the museum space can become an extremely broad and complex task that is defined by the curatorial intentions towards the exhibition events as well as by its inhabited nature. Today's museums and galleries put an increasing emphasis on constructing experiences and diverse interpretations. Psarra (2006) also supports the significance of space/spatiality in enabling museum officials and designers to meet their spatial, social and aesthetic objectives.

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2.3 SOCIO-SPATIALITY IN MUSEUMS

The design and deployment of exhibits and systems in museums and galleries is an extremely challenging task that cannot ignore that people normally examine and make sense of exhibits in and through social interaction (vom Lehn et al, 2005).

Bevlin states that, "Design is the organisation of materials and forms in such a way as to fulfill a specific purpose." (Belvin, 2006). In the case of museums, that purpose is to visually, aurally and socially, attract and pull in the visitor. Good design draws the visitor in, engages all the senses, and compels the visitor to investigate the topic at hand. This is the basis for exploring the concept of a socio-spatial design approach that integrates the ability for multiple social interactions within the exhibition space.

Simon (2010) argues that cultural institutions such as museums must reconnect with the public by actively engaging visitors as cultural participants and not passive consumers. She defines a participatory cultural institution as follows:

"...a place where visitors can create, share, and connect with each other around content. Create means that visitors contribute their own ideas, objects, and creative expression to the institution and to each other. Share means that people discuss, take home, remix, and redistribute both what they see and what they make during their visit. Connect means that visitors socialize with other people—staff and visitors—who share their particular interests. Around content means that visitors' conversations and creations focus on the evidence, objects, and ideas most important to the institution in question. (Simon, 2010)

In linking this definition to the subject of socio-spatiality, it is observed that each of the three keywords, i.e. 'create', 'share', 'connect' contain and describe an aspect of social interaction; also the phrase 'around content' provides the setting or *'place'* for these actions. It therefore supports the notion that these social interactions must be spatially identifiable. While Bevlin's argument broadly addresses the definition of space which compels some form of social action, Simon's argument narrows the focus to defining those interactions which inform the design of a participatory cultural space, such as the museum. Although her definition clearly points out these social dimensions of a participatory cultural institution, it still does not provide a base definition for what a socio-spatial museum is.

MacLeod suggests that challenges to create inclusive and accessible spaces open to appropriation and responsive to contemporary agendas have resulted in new architectural forms for museums, inside and out (MacLeod, 2005). This points to the realisation that there may be no exact or defining dimensions for what comprises socio-spatiality apart from those activities that are defined by both the museum's organisational goals and agenda as well as

the users' requirements within the space. The question then arises: should and can the museum space ideally be designed to accommodate **all** multi-social interactions? Fleming's (2006) argument provides a partial answer to the question:

"Museums are 'somewhere', not 'anywhere'. Each is unique and the most successful are of their place, of their setting. Each has a specific context. They are similar in some ways to churches, or to shopping centres and other gathering places, but they have a function quite different from these places: they contain things of power; they deal in the tangible, as well as in ideas; and they require no belief, just enquiry. Moreover, museums are places where people go and, in an ideal world, mix with others unlike themselves. If they are to have a broad appeal museums must be multi-layered, and have to please a great variety of people."

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Although Fleming's argument, like most of the previously discussed studies, supports the notion of the design of the museum space for multi-social interaction, his last statement highlights the crux of the matter on the concept of socio-spatiality: the appeal to such a 'great variety of people' brings into sharp focus certain descriptive markers of space such as 'scale', 'extent' and 'size', which have so far not been probed within this research. The concept of socio-spatiality can only be functional and applicable if the resulting museum space were to possess a character that allowed each user to create their own distinct sense 'place' within any given area of that space. Thompson's (1990) model in figure 2.4 suggests the creation of a *'dynamic museum environment'*, one that can produce a variety of outcomes by taking into account the social (visitor) and the spatial (museum) factors, which affect the experience outcome. He proposes that all visitor characteristics and spatial museum components interact to produce **'mediators'**, which are reactions that are potentially observable and measurable (Thompson, 1990). These mediators function, in most instances, in combination to produce **'goal-referenced outcomes'**. Thompson's model is discussed further in chapter four of this research.

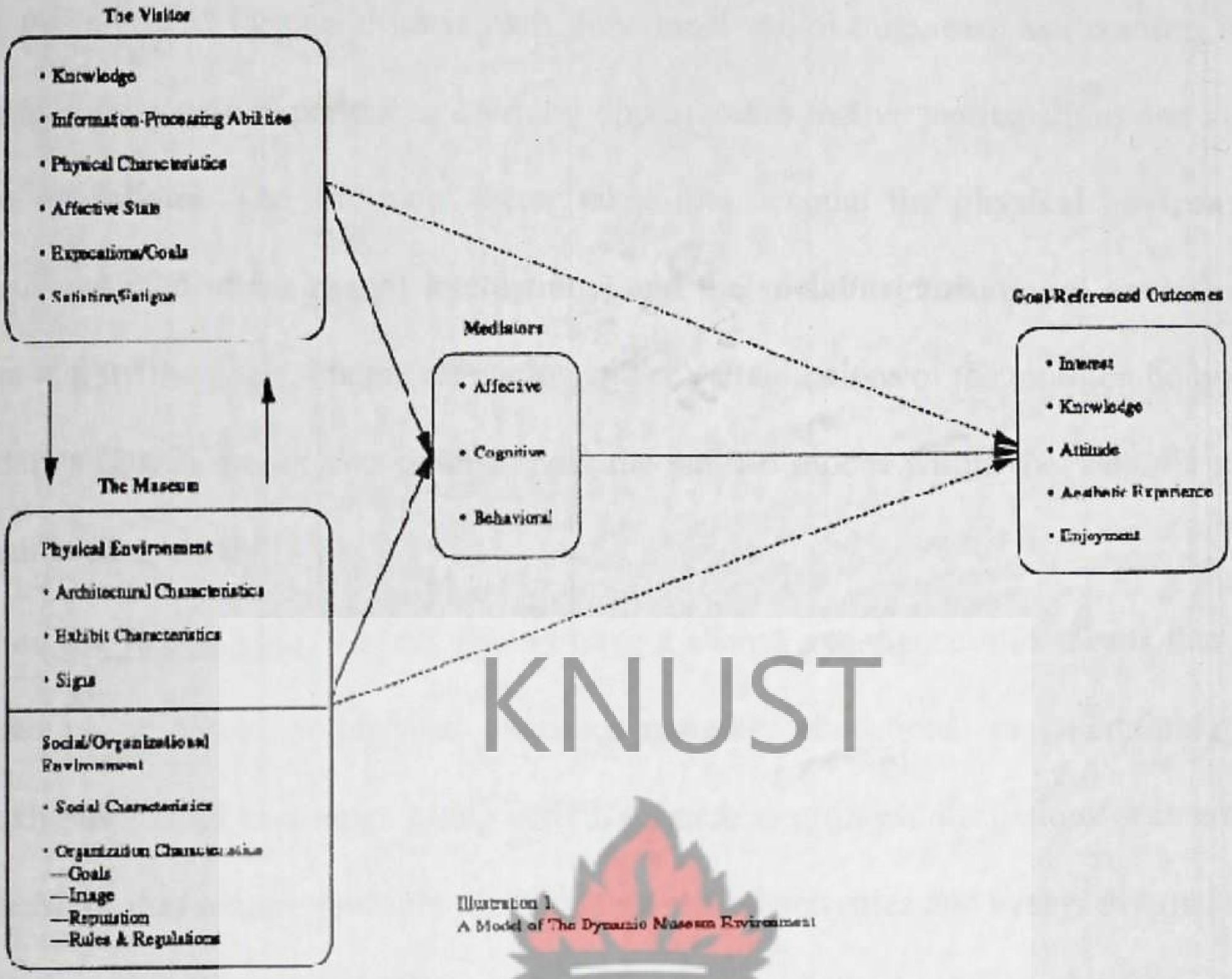

Illustration 1.
A Model of The Dynamic Museum Environment

Figure 2.4: Model of the dynamic museum environment
Source: Thompson (1990) An Architectural View of the Visitor Museum Experience

The success of Thompson's model is in its ability to be both observable and measurable; as such, the two factors of this model that define the socio-spatial nature of the museum i.e. the visitor and museum factors are used within the case study section of this report to evaluate the museum experience. The **'visitor'** factor of the model takes into account the following: **knowledge-base** of the visitor (the visitor's familiarity and preconceptions of the exhibits and exhibition which places him/her in the position of 'novice' or 'expert'), **information-processing ability** of visitor (the individual ability to understand and apply any given material or interpret exhibits), **personal interests** of visitor (the visitor's individual bias toward a particular exhibit or topic), **physical characteristics** of visitor (physical mobility, sensory capabilities, etc.), **affective state** of visitor (emotional disposition), **expectations and**

goals of visitor (need for social interaction, functional use of time, ease and comfort in the space, challenging new experiences, learning opportunities, active participation) and **visitor satiation or fatigue**. The 'museum' factor takes into account the **physical environment** (preivously outlined under spatial interactions) and the **social/organisational environment** (these are mainly the goals, image, reputation and rules/regulations of the museum body).

Debenedetti's (2003) model also outlines how the various modes within the semiotic square can be achieved spatially:

- For **the fusion visit**, visitors should have a shared experience: this means that there can be no visual or physical obstacles (whether educational or entertaining[3]); all exhibits should encourage group activities (such as quizzes, discussions or interactive sessions that require multiple participants); shared activities and events external to the museum's collection (lunch-breaks, seating, scenic/meditative landscapes)
- For **the private experience**, there should be the incorporation of private spaces (alcoves, recesses or secluded seating facing the exhibition) to provide a sense of intimacy with the exhibit; interactive tools such as headset audio-visual tours should be encouraged for certain exhibitions to permit the visitor to distance themselves - virtually- from their immediate social environment.
- For **the separated experience**, frequent meeting points (physical navigational markers, easily locatable seating places) would enable separated visitors to find one another periodically while permitting the visitors to enjoy a dual museum experience - at their own pace as well as together.
- For **the pursuit of social contact**, guided tours along designed circulatory routes, planned areas for social discussion along the tour, interactive sessions that require multiple participation help to alleviate the feeling of isolation for single visitors.

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2.4 CONCLUSIONS

From the provided literature on the issue of museum experiences and museum interactions, it is possible to draw some conclusions on the issue of how various museum interactions inform the museum experience.

- It is possible to measure or evaluate the museum experience provided all the characteristics which form the experience are well-defined.
- The museum experience is a collective result made up of both curatorial and public goals and expectations.
- All experiences are dynamic in nature: an individual's experience is dependent on his/her personal, social and physical contexts, as such no two experiences are ever exact.
- Museum experiences may be active or passive, positive or negatives depending on decisions taken by visitor.
- The interactive museum experience involves participation of the user and his/her space (exhibition or gallery area). The user's choices play a significant role in shaping the final experience or outcome.
- The extent of meaning or experience of the visitor is determined by the quality of the interactions had by the visitor; any meaningful experience must satisfy the key areas of personal, social and spatial interactions.
- Each museum interaction is influenced to a certain degree by the other; both social and physical interactions must satisfy a visitor's need for individuality as much as one for community (the pursuit of social contact or interaction).
- Social interactions are almost unavoidable and involve more than verbal communication - visitors continually encounter one another in the space (social awareness) and are influenced in one way or another by other visitors.

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- Space is always linked - whether directly or indirectly - to some form of human occupation, behaviour or function; the unique relationship between man and space is found at the level of public configurations of space.
- Each 'space' can become 'place' depending on how it is appropriated by a user. Public museum spaces, for example, can be transformed into private areas depending on the availability of such transformational features and how they are utilised by the users.
- Museum spatiality is observable and made up of all the aspects the visitor encounters his/her senses (visually, aurally, psychologically, socially).
- Socio-spatiality in museums exhibits a dual/dynamic nature and involves the integration of multiple social interactions into a multi-functional space.

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ENDNOTES:

1 Sheng and Chen, 2011
C-W. Sheng, M-C. Chen
A Study of Experience Expectations of Museum Visitors
Elsevier, Tourism Management, 33 (1) (2012), pp. 53-60

2 The terms 'occasional visitor' and 'non-visitor' are taken from Debenedetti (2003) Investigating the Role of Companions in the Art Museum Experience.

3 This refers to all audio-visual tools or gadgets used within the exhibition that in any way excludes others from the experience.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter presents a description of the methods and procedures used in order to obtain needed data as well as the description of methods for analysis and interpretation. Using qualitative research based on observing visitor behaviour and responses specifically within the Ghana National Museum will help to explain the relationship between visitor interaction and the museum experience. A research based on an observation study makes it possible to analyse behaviour – in particular, non-verbal behaviour manifested during the visitation – and to assess how the environment (consisting of the architectural space and its museographical arrangement, i.e. the layout, the nature of the objects on display, the communication and exhibition methods, etc.) affects the way of participating and interacting with the museum (Bollo and Pozzolo, 2005). This section justifies and validates the means by which the study results was obtained in order to authenticate all acquired data and the formulation of conclusions.

The research is aimed at uncovering the extent of spatial interactions within the museum and forming a basis for the need for a socio-spatial approach to design of the museum space. On-site research was spread across a period of one year covered by three major/ notable exhibition events within the Museum: namely the Black Music Odyssey, The Unveiling the Mask exhibition and a special study during the period of Independence Day Celebration.

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3.2 RESEARCH APPROACH

For this study, a qualitative research approach was applied because it provided a broader, open-ended and exploratory investigation in order to give a clearer and unbiased view of the subject issue. On the study of the impact of visitor expectations on the visitor experience, Shen and Cheng applied a qualitative approach to the collection and analysis of data. This made it easier to apply the findings to the relationship between other expectations and actual experiences (Shen and Cheng,). Within the context of studied human behaviour it enables an approach that allows the participants to freely express their needs and interests. It also enable an approach to data collection and analysis that is inductive and methodical while also allowing for greater flexibility in forming of research findings and formulation of meaning.

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3.3 METHOD OF DATA COLLECTION

The source of data collection as such can be categorised into primary and secondary sources of data collection. The primary method of data collection was through observational studies. The method of triangulation was employed by use of other data collection methods in order to ensure proper checks of all observations and interpretations; such additional sources were selective interviews and document analysis.

3.3.1 PRIMARY SOURCE OF DATA:

3.3.1.1 Observation/Field Research

Data for the studies was primarily gathered through an observation study. The observational study involves the systematic detailed observation of behaviour and talk, i.e. watching and recording what people say and do; it is widely used by museographers and researchers (Bollo and Pozzolo, 2005). It consists of observing, coding and measuring visiting times, and interpreting visitors' behaviour along the exhibition route (Bollo and Pozzolo, 2005). O'Dell

(2007) suggests that any study on visitors or tourists should focus on "being there" and be close to visitors or tourists instead of observing from a distance. This is due to the belief that visitors/tourists are no longer pure receivers, observers or interpreters; instead, they are active experientialists and even meaningful creators and actors.

From a methodological point of view, the observation study may play a decisive analytical role since, by observing behaviour, it observes facts and actions that are preconditions for learning and non-learning situations. It also identifies the places in the museum where real production of meaning can take place more effectively or in a more widespread manner (Bollo and Pozzolo, 2005).

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From the theoretical point of view, observation of the behaviour of visitors within a museum area makes it possible to tackle some particularly important issues and phenomena that occur during a museum experience. This includes the time, the choice of display area, the attention-span and the ability of the information – which is to be considered as a "scarce resource" – to hold the attention of the user, and the way the visit is organised, which is considerably influenced by the layout of the space (Bollo and Pozzolo, 2005).

However, the use of the observation method does not in any case preclude the simultaneous and integrated use of other data-collection techniques. On the contrary, there is the possibility of supplementing the observation study with other methods and survey instruments (interviews, focus groups, questionnaires) (Bollo and Pozzolo, 2005).

The observation study thus makes it possible to assess empirically if a museum or an exhibition is able to ensure the necessary conditions (even if they are not yet sufficient) throughout the visit, so that learning processes and the production of meaning can take place (Bollo and Pozzolo, 2005).

In the case of the study, the researcher played the role of the participant observer. This enabled the researcher to not only observe and record behavioural patterns, but also to join in activity and interact, thus making it easier to conduct informal interviews of sample. This method of observation will lessen the risk of 'observer effects' i.e. attracting attention of sample respondents and being discovered. Attracting attention of sample will create a high consciousness of being observed or watched which in turn will make respondents uncomfortable and introduce an aspect of bias. In that case, genuine responses are not assured and the data becomes invalid.

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3.3.1.2 Interviews

Selective interviews were conducted and integrated into the observation study. This made it possible to triangulate and compare an interpretation of facts and behaviour with the perceptions, opinions and cognitive formulations of the individuals concerning these facts and this behaviour (Bollo and Pozzolo, 2005).

3.3.1.3 Photographs, Drawings And Sketches

Drawings and sketches were included in order to give schematic impressions of visitor circulation patterns within the museum space. They help to show distribution patterns of visitors during the exhibition event and graphically demonstrate the nature of the visitor interactions within the physical context and from an architectural perspective. The photographs were taken to serve as visual aids in portraying and validating the data observed.

3.3.2 SECONDARY SOURCES

In order to acquire a 'control study' to enable a comparative analysis of collected data based on the outlined characteristics of a museum experience and the listed interaction indicators, the study commenced with an extensive literature search and review in order to obtain an appropriate case study to act as the control. The methods employed to achieve this were:

- References from academic library including books, journal, reports and other literature works
- Online searches
- Reported accounts

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3.4 SAMPLING/SAMPLING TECHNIQUE

A purposive sampling method was employed and the setting for the study was chosen as the exhibition section of the Museum. This is because the Museum's exhibition hall bears a greater number of visitor interactions. The sample population was defined as the visitor population of the Ghana National Museum. The sample respondents fell within categories outlined in the observation schedule; the selected sample were spread across three studied exhibition events organised by the Museum. Since the return of selected sample respondents could not be assured, the study was aimed at capturing their view immediately after the exhibition event.

3.5 TOOLS FOR DATA COLLECTION

A number of observation study schedules were designed for the study and used to achieve the main objectives of the research. One of them applies the method of event sampling:

Event Sampling (or Frequency Counting): a list of the facts, events or behaviours under investigation is devised (usually based on a pilot study), and the number of observed instances is recorded on a checklist, without taking into account the chronological order.

Time Sampling (or Frequency Counting): this would take into account the chronological order; in this case, the units of observations are entered at standard intervals of time (for this study, every 1 minute) and coding happens as the observation unit occurs.

Rating Scales: This will be used to make judgements about the observation and then enter these into a predetermined rating scale based on the interaction indicators.

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3.6 DATA ANALYSIS

Bollo and Pozzolo (2005) suggest that in order for effective translation of all data, the constituent elements of the exhibition (works, exhibits, panels, captions, etc.) need to be transformed into measurable characters (Screven talks of "learning performances") and the elements of the environment into exhibition surfaces, nodal points, interchange points and stopping areas. This is done to reducing the extensive input involved in phases of coding behaviour, rendering and interpreting data that is involved with translating the result of a highly subjective and arbitrary operation – the act of observing – into a sign and matrix format that makes verifiable measurements and comparisons possible.

The measurability and application of performance indicators is mainly based on the indexes proposed by Shettel (1973), integrated and tested in a very large number of museums and exhibitions. Examples include the work of Serrell, who has analysed and compared observations from more than 150 museums and exhibitions. The main indicators used are:

Attraction power:

Indicates the relative incidence of people who have stopped in front of an object/exhibit during the exhibition tour. It is calculated by dividing the number of people who stop by the total number of people who have visited the museum or gallery The indicator provides an initial idea of the power of attraction or attention exerted by the object on show. The index varies from 0 to 1, and the closer it is to 1 the greater is the power of the element to attract.

$$\text{Attraction index:} \quad \frac{\text{No. people who stopped}}{\text{No. people observed}} \qquad >0 \; ; <1$$

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Figure 3.1: Calculation of the attraction index
Source: Bollo and Pozzolo (2005) Analysis of Visitor Behaviour in the Museum

Holding power:

Measures the average time spent in front of an information/communication element (e.g. a panel, a video, a caption, etc.). It is calculated by dividing the average time of stay by the time "necessary" to read an element. The calculation of the "necessary" time is established by the researchers, who measure the time that is essential for the entire communication about a particular object to be taken in. The index ranges from 0 to 1 (it may be greater than 1 if the average is greater than the time considered "necessary", but this is a theoretical case). The closer it is to 1, the greater the ability of the element to hold the visitors' attention will be.

$$\text{Holding-power index:} \quad \frac{\text{Average stopping time}}{\text{Utilization time necessary}}$$

Figure 3.2: Calculation of holding power index
Source: Bollo and Pozzolo (2005) Analysis of Visitor Behaviour in the Museum

Where possible, it is important to apply both indicators, since joint analysis makes it possible to carry out both quantitative and qualitative assessments. The information panel in a gallery, for example, might have a very high attraction index, but only a modest holding-power index: this would suggest that the panel is placed in an area of great visibility, but that it either provides too much information, or the style and content of the information do not encourage reading.

Utilization Times: The average utilisation times (for the complete visit, for particular sections, by type of user)

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Sweep Rate Index (SRI): This index is calculated by dividing the total size of the exhibition in square metres by the average time spent by visitors within this exhibition area. It is used to calculate if visitors move slowly or quickly through the exhibition. Analysing about 150 museums and exhibitions, Serrell derived an average index value of between 35 sq.m/min for small exhibitions, and 60 sq.m/min for larger ones (Bollo and Pozzolo (2005).

Diligent Visitor Index (DVI): This index is obtained by calculating the percentage of visitors who have stopped in front of more than half the elements that make up the exhibition. The percentage of "diligent visitors" helps evaluate to what extent the exhibition has been visited. The index also helps to assess whether or not the ratio of the density of objects to the time available is adequate. A low value might be interpreted as indicating that the exhibition is too long or too dense for the available time or for the attention-span of the average visitor, rather than as indicating a low level of study and interest (Bollo and Pozzolo (2005).

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The SRI and DVI work as audit data, elements that are capable of recreating the conditions of the museum environment in which the visit takes place, thus making it possible to calibrate comparisons between different museums, weighing up the results that emerge from the application of attraction and holding-power indexes.

With regards to behaviour modelling, innovative methods of conceptual and graphic representation of the results were experimented during the study. These were used alongside other schematic diagrams and drawings. **'Typical' flows and paths** (Bollo and Pozzolo, 2005) were reconstructed graphically, selecting significant final clusters of users that reveal regularities and repetitions in their way of visiting and using the space (groups of people who converge on the same "goals" and the same interchange points along the way, using these to establish the rhythm and respite of their visit). Figure 3.3 is an example of such a diagram.

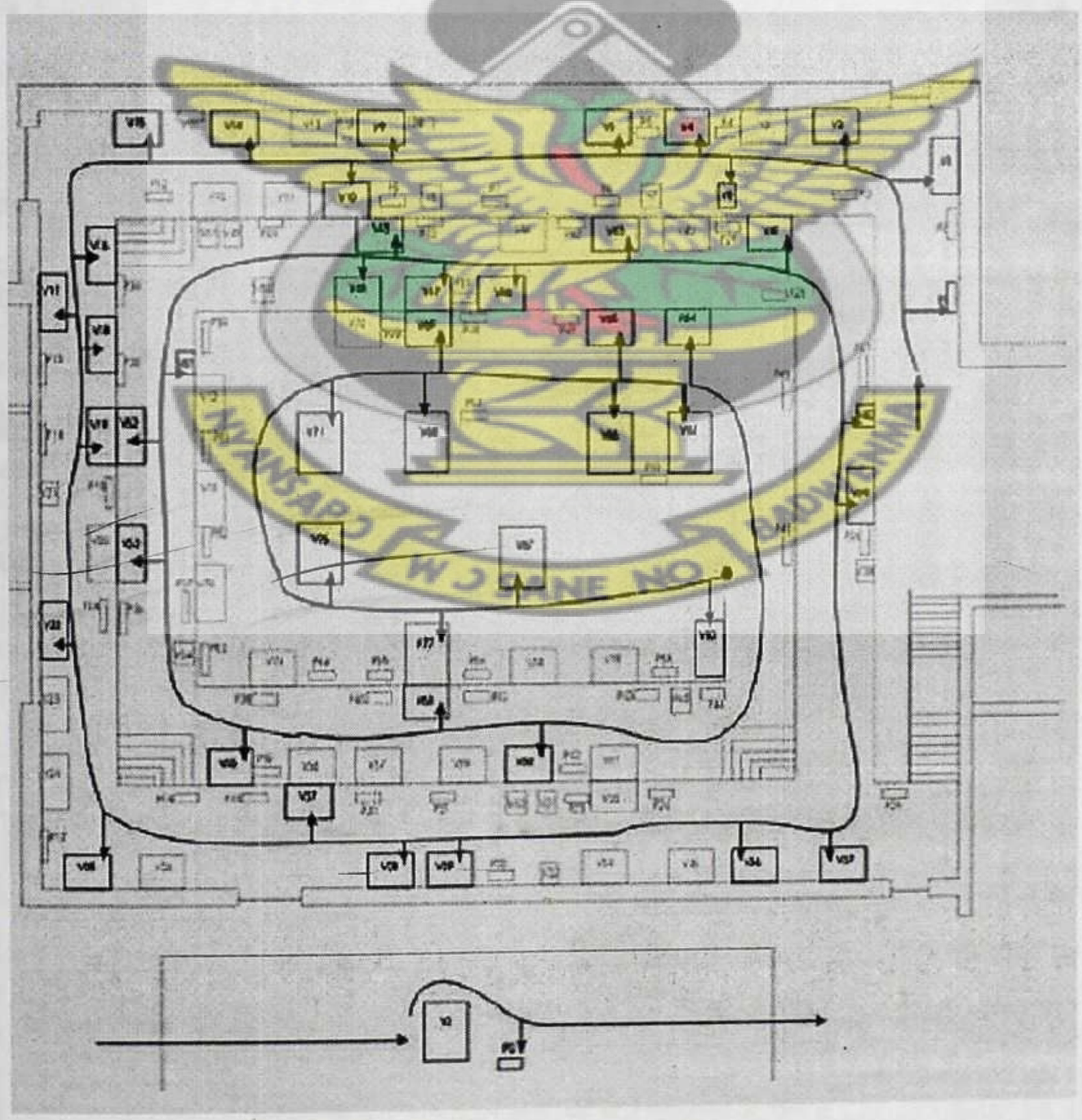

Figure 3.3: Example of typical 'flows' and 'paths'
Source: Bollo and Pozzolo (2005) Analysis of Visitor Behaviour in the Museum

A second form of visual representation, as shown below in figure 3.4, was also used to give an immediate idea of the overall use of the museum area by the visitors. It was designed to highlight any recurrences or differences, according to the clusters being examined (by socio-cultural groupings, by the amount of time spent, by the way the visit was carried out). This study led to the creation of a metaphorical structure capable of responding effectively to the desired requirements: that of the "thermograph". By using the metaphor of "thermography" it is possible to define the "hot" and "cold" parts of the museum (where "hot" and "cold" indicate higher or lower interaction levels between users and the display). From a graphic point of view, each index value is coloured with a different degree of red and blue. The outcome is a map which lets museum management immediately detect the areas of the museum that offer the highest and lowest levels of attraction and interest (Bollo and Pozzolo, 2005).

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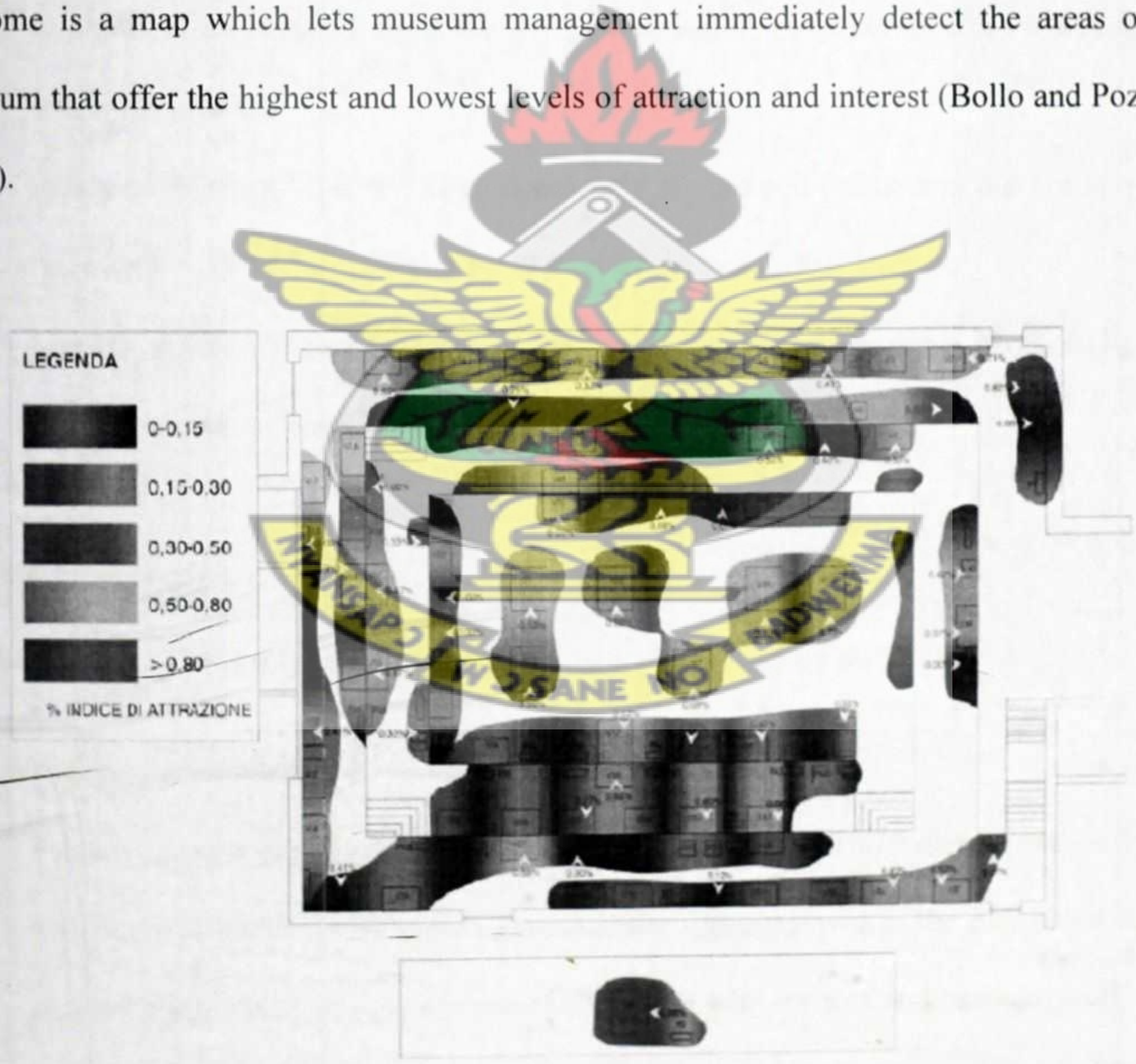

Figure 3.4: Example of a 'thermography'
Source: Bollo and Pozzolo (2005) Analysis of Visitor Behaviour in the Museum

Morse and Field (1995) explained that data collected from a study should be labelled in sets of themes. Applying this concept, the themes were analysed using graphs and diagrams. Innovative methods of conceptual and graphical representation of results were employed as well as schematic diagrams and drawings.

3.7 LIMITATIONS

The following were some limitations in conducting the study:

- Limited local literature on the subject of museum design and interaction.
- Inaccessible local literature on the subject of museum design and interaction.
- Limited visitor populations at any given time within the museum from which sample was to be sourced.
- Relevant literature in some cases could only be sourced online and did not allow the researcher to download for manageable viewing and further studies.
- Limited number of exhibition events hosted by the Ghana National Museum in order to give an extensive and well-formed view of the issue.

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3.8 ETHICAL ISSUES

The following were the ethical considerations used to conduct the research:

3.8.1 Issues Concerning Researcher

- Permission was sought from the Ghana National Museum in order to gain access to museum's database, gain permission to easily circulate within the exhibition hall to conduct studies and also permission to discourse with visitors and museum staff.
- Care was taken to avoid the inclusion of researcher bias within studies, bias through inappropriate sampling and false report of findings in order to achieve valid and authentic research results.

- Informed consent was received in order to use 'test-run' design suggestions and proposals within museum space in order to prove or disprove their effectiveness and benefits.
- Information for literature studies was not used in any way to directly or indirectly cause harm or any other adverse effect on study population or on any other individual involved within this study.

3.8.2 Issues Concerning Research Participants

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- Permission was obtained from visitors to use them as participants within the study based on justified reasons and relevance for study .
- Care was taken to avoid the use of incentives to encourage participation in research.
- Confidential and sensitive information was not included in study findings or results in order to avoid an invasion of participants' privacy neither were questions asked which infringed on participants' rights to privacy.
- Care was taken to avoid causing harm or discomfort to participants in any way during the study; the risk of causing such harm was kept to a minimal.
- Care was also taken to maintain the confidentiality of all participants

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1 INTRODUCTION

The chapter begins with a brief documentation on the Ghana National Museum, which highlights the significance of a national museum. The findings and results of the study are then presented and discussed as outlined. The chapter presents data obtained on visitor interactions and spatial quality within the Ghana National Museum using a qualitative research approach that employed participant observation, selective interviews and document analysis. The findings presented in this chapter are in line with the aims and objectives of this study. Three different exhibition events were covered within this study, namely the Permanent Exhibition, the Black Odyssey Exhibition and the Renaissance Arts Exhibition. The results of the study were then discussed in two parts, according to the data collection methods that were used. The results of the study are aimed at addressing the previously stated research questions. Findings from each section were analysed to identify trends and variations in visitor behaviour and interactions while ascertaining the quality of the studied gallery spaces to foster visitor interactions. On the basis of the results obtained, a conceptual design model is developed and outlined using certain precedence studies as references on functionality of social spaces within galleries; the conceptual model is further discussed within the proposed design of a national museum of culture and arts in chapter 5.

4.2 PRESENTATION OF FINDINGS AND RESULTS

Results of the study were divided up into Part A - 'Observation Study' and Part B - 'Interviews and Document Analysis'. The discussion and analysis of the study results are

structured based on the derived theoretical framework for the museum experience: accessibility, visitor circulation and movement, visitor behaviour and actions, social interactivity and communication, response to ambient environment (lighting, acoustics, audio-visual aids and thermal conditions), response to space, response to exhibit, personal translation and derived meaning, achievement of personal goals and expectations.

4.3 CASE STUDY 1: GHANA NATIONAL MUSEUM

The Ghana National Museum is one of the oldest museums in West Africa. It is the largest and oldest of the museums under the administration of the Ghana Museums and Monuments Board. It was inaugurated on the eve of March 5, 1957 and opened to the public a day before Ghana, then a Sub-Saharan colony, declared its independence (Jenkins, 2011). It was commissioned by the nation's first president, Dr. Kwame Nkrumah - known to many as the father of pan-Africanism, and designed by the British architect Sir Denys Lasdun. The intention of Dr. Nkrumah was to build a national ethnographic museum that communicated the stories of the people and created a symbol of identity.

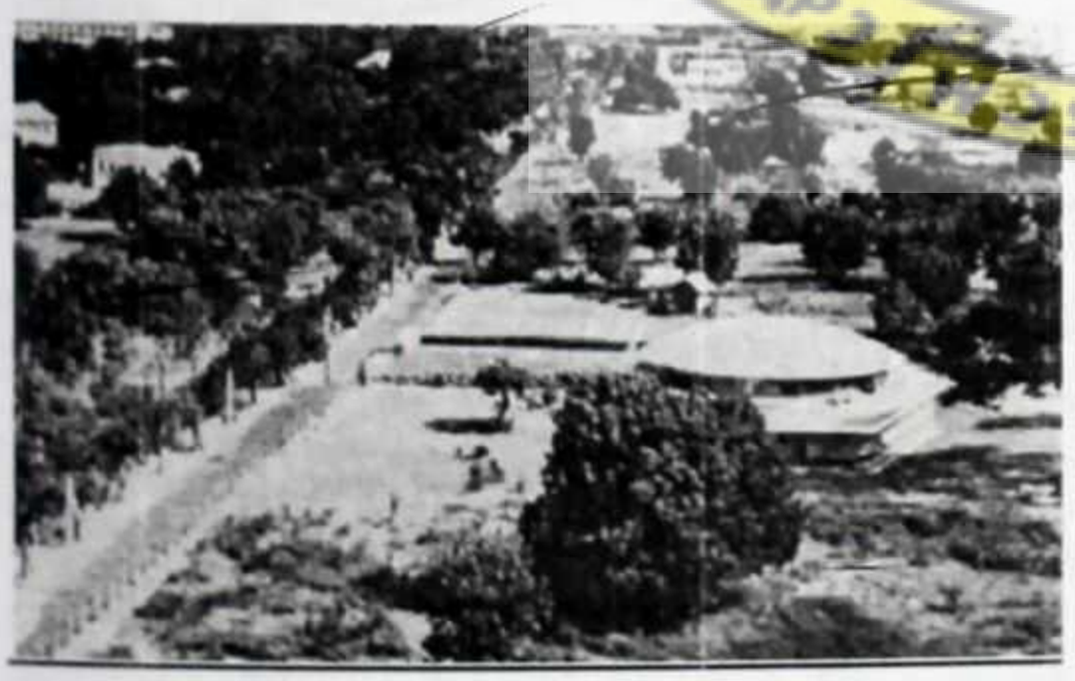

Fig.4.1: Aerial view of the National Museum
Source: ArchiAfrika (2011)

Fig.4.2: Approach into the National Museum
Source: Author

4.3.1 Site Location

The site for the museum was the capital city, Accra on the current Barnes Road. Located northeast of the thriving Central Business District the museum's site was incorporated into what was to become Accra's cultural artery, Barnes Road, where many other national and cultural institutions were also allocated space. At the time, the site also marked an interstitial space between two prominent neighbourhoods of Adabraka, where an emerging African elite resided and whose architecture contrasted the European colonial settlement in Ridge.

Fig. 4.3: Map showing Location of the National Museum
Source: Author

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4.3.2 Overview

The museum's primary objective at the time - along with other African museums such as the National Museums of Uganda and Tanzania, the Revolution Museum in Mozambique and many others - was geared towards promoting a culture of nation building and national pride through the public display of its traditions and arts. Ghana became a mecca and the museum the site for legitimising ancestral heritage and strengthening the African personality. The first of the collections were artefacts of a thirty year period of colonial history and offered glimpses of newer collections that visualised the future of the nation. Even the absence of certain artefacts and the presence of others were deeply revealing of interwar attitudes that involved a ransacking of prized cultural possessions as well as a subsequent conscious movement to construct the nation's pre-colonial history. The latter's presence' was framed within the museum's bold architectural forms which was to become part of a larger architectural movement that sought to develop a deep sense of national consciousness. (Lokko, 2011). Currently, the exhibition gallery holds 10% of the museum's 25,000 artefacts.

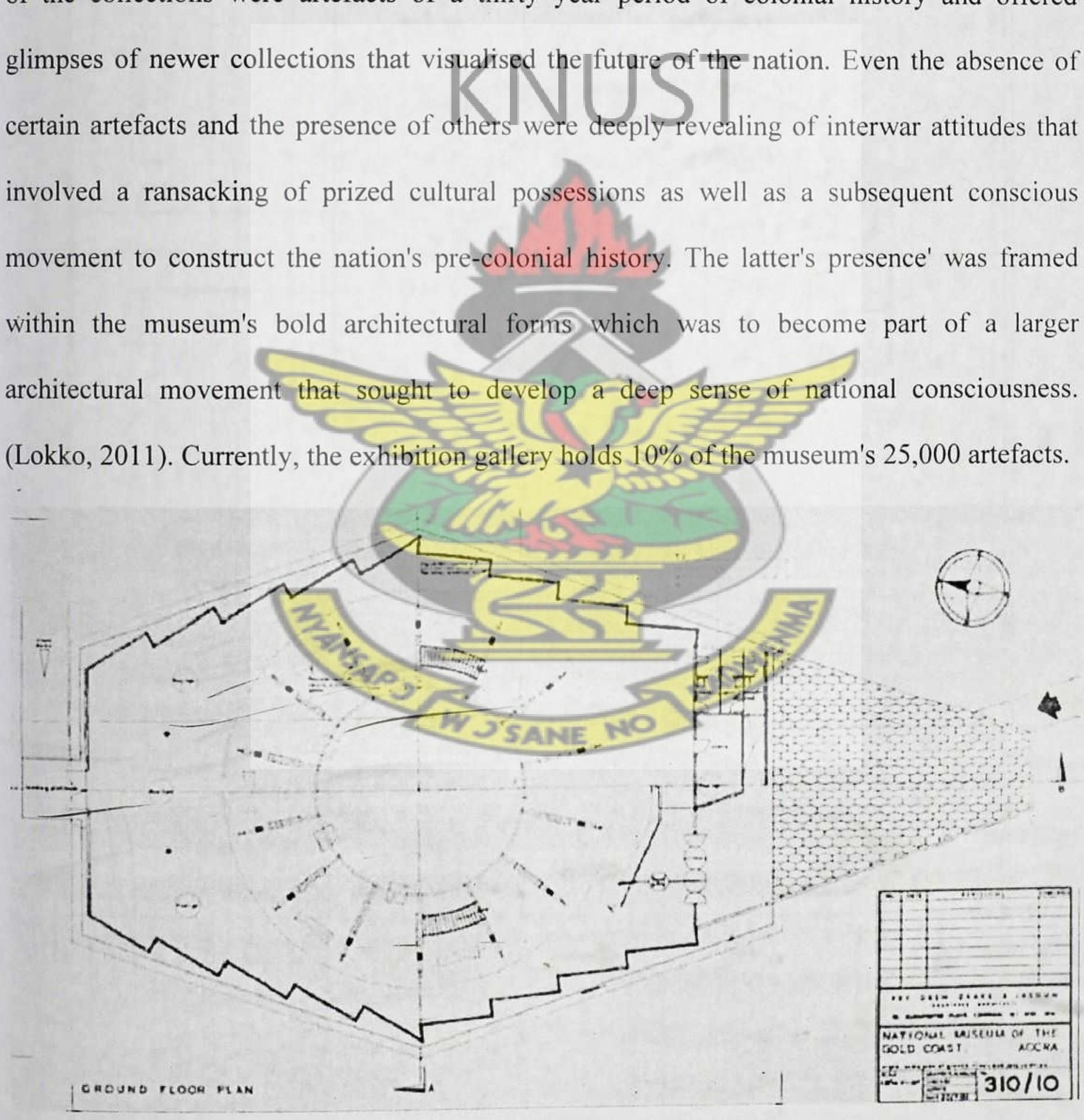

Fig. 4.4: Ground Layout of the Ghana National Museum
Source: ArchiAfrika (2011)

4.3.3 Spatial Configuration of Exhibition Spaces

The exhibition space of the Museum is structured along two perpendicular axes, with its longer axis being the north-south axis and the hall's main points of entry. The east-west axis determines the maximum width of exhibition area. The intersection of the axes forms the central point of the exhibition area (Figure 4.5). The main structure radiates circularly from a central point, enclosed within a hexagonal exterior shell that permits daylight and ventilation.

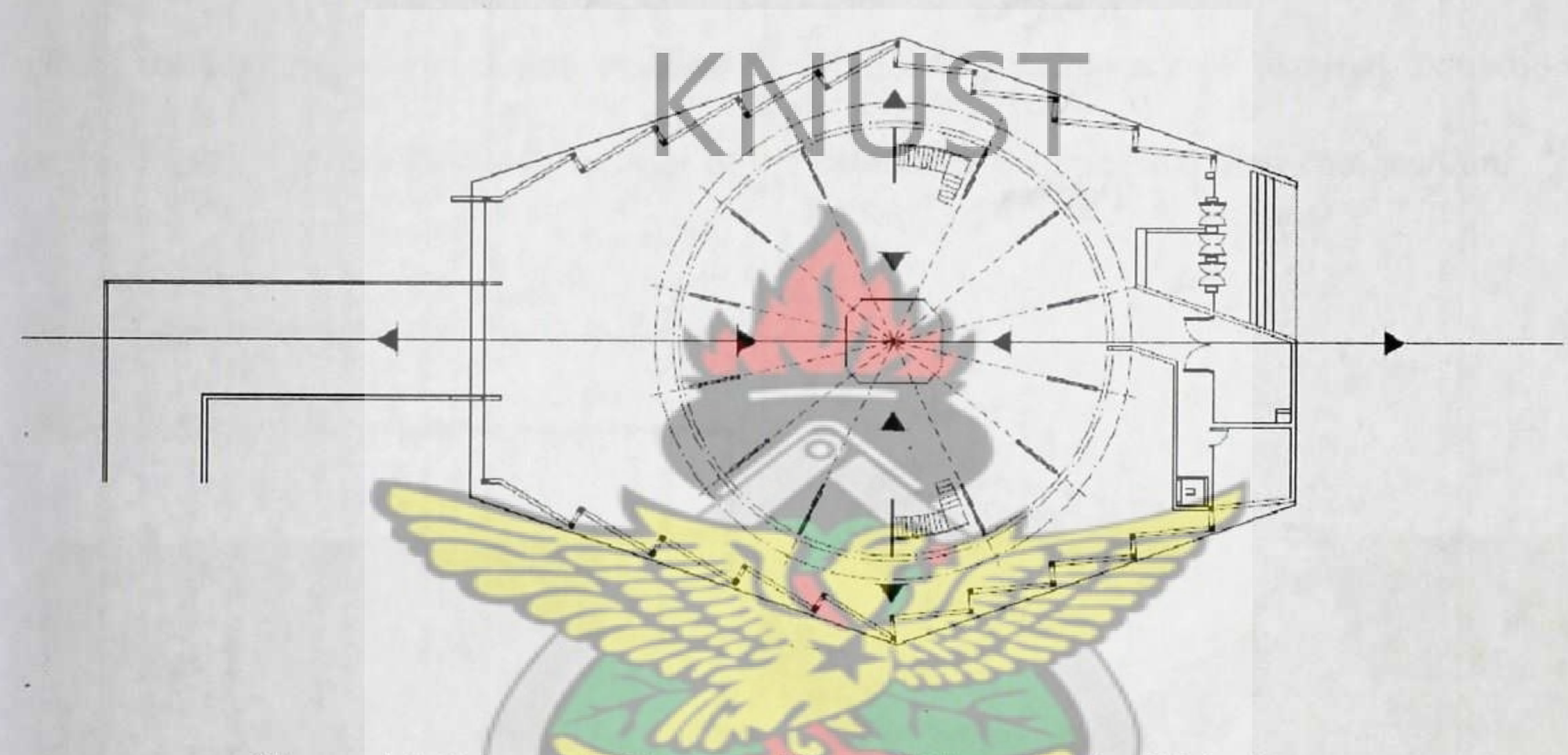

Figure 4.5: Schematic Diagram of Ground Floor showing Main Axes
Source: Author

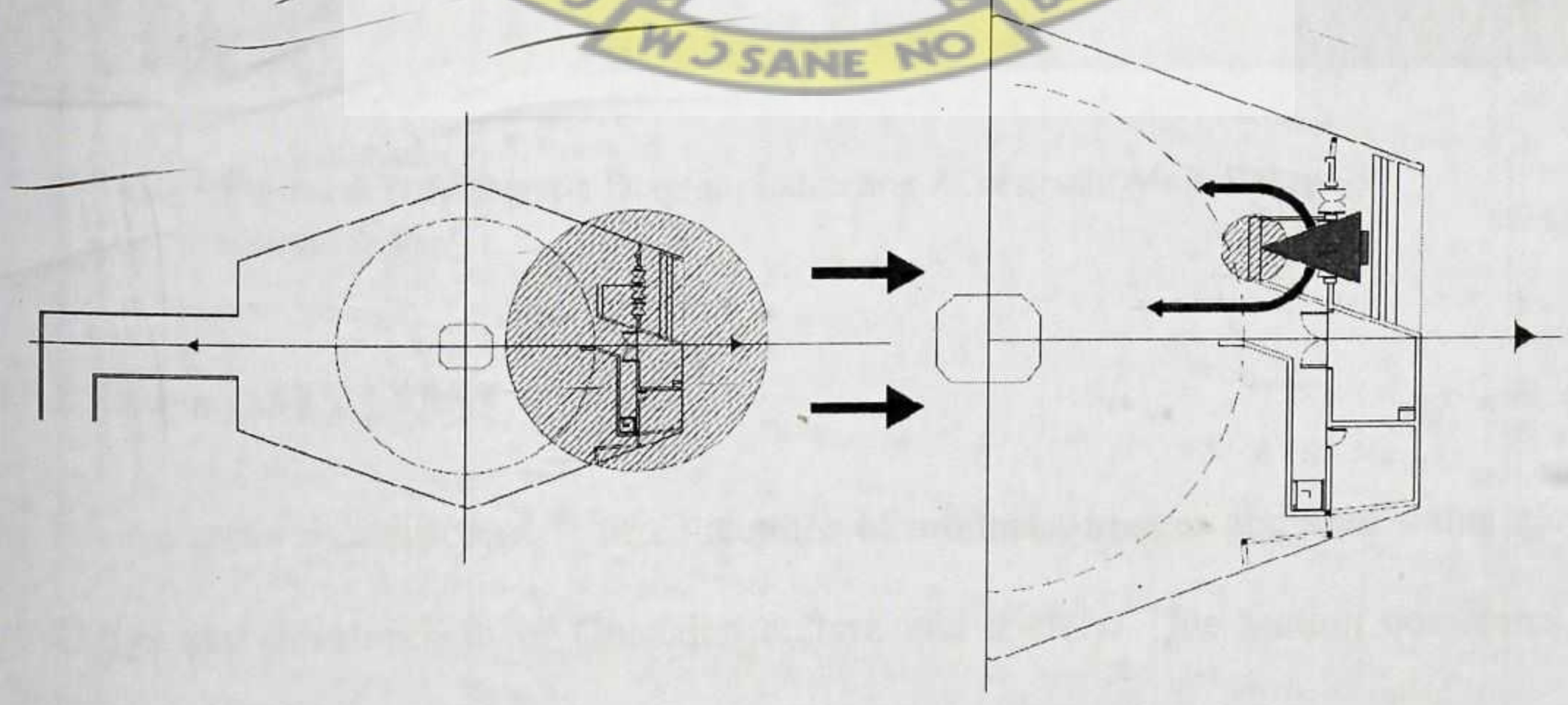

Figure 4.6: Schematic Diagram indicating Access into Main Reception
Source: Author

The main access into the exhibition hall is on its southern side through a series of double doors as shown in Figure 4.6. The reception point forms the first point of call. Visitors then enter or leave through a turnstile access on the left; the opposite access is reserved for staff.

The exhibition area is divided into three main galleries: ethnographic gallery, archaeological gallery and contemporary arts gallery. The ethnographic and archaeological galleries form the main exhibition hall at two floor levels while the contemporary art gallery remains at ground level. The ethnographic and archaeological sections form the permanent exhibition program whiles the contemporary section is allowed for holding temporary or featured exhibition events. Figure 3 shows the mass sections of the exhibition galleries and their composition.

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Figure 4.7: Schematic Diagram indicating Access into Main Reception
Source: Author

i. Ethnographic Gallery

The ethnographic section consists of collections of artefacts, images and scenes that narrate the origins and development of Ghanaian culture and society. This section dominates the ground floor of the exhibition space and is divided into specific sub-sections.

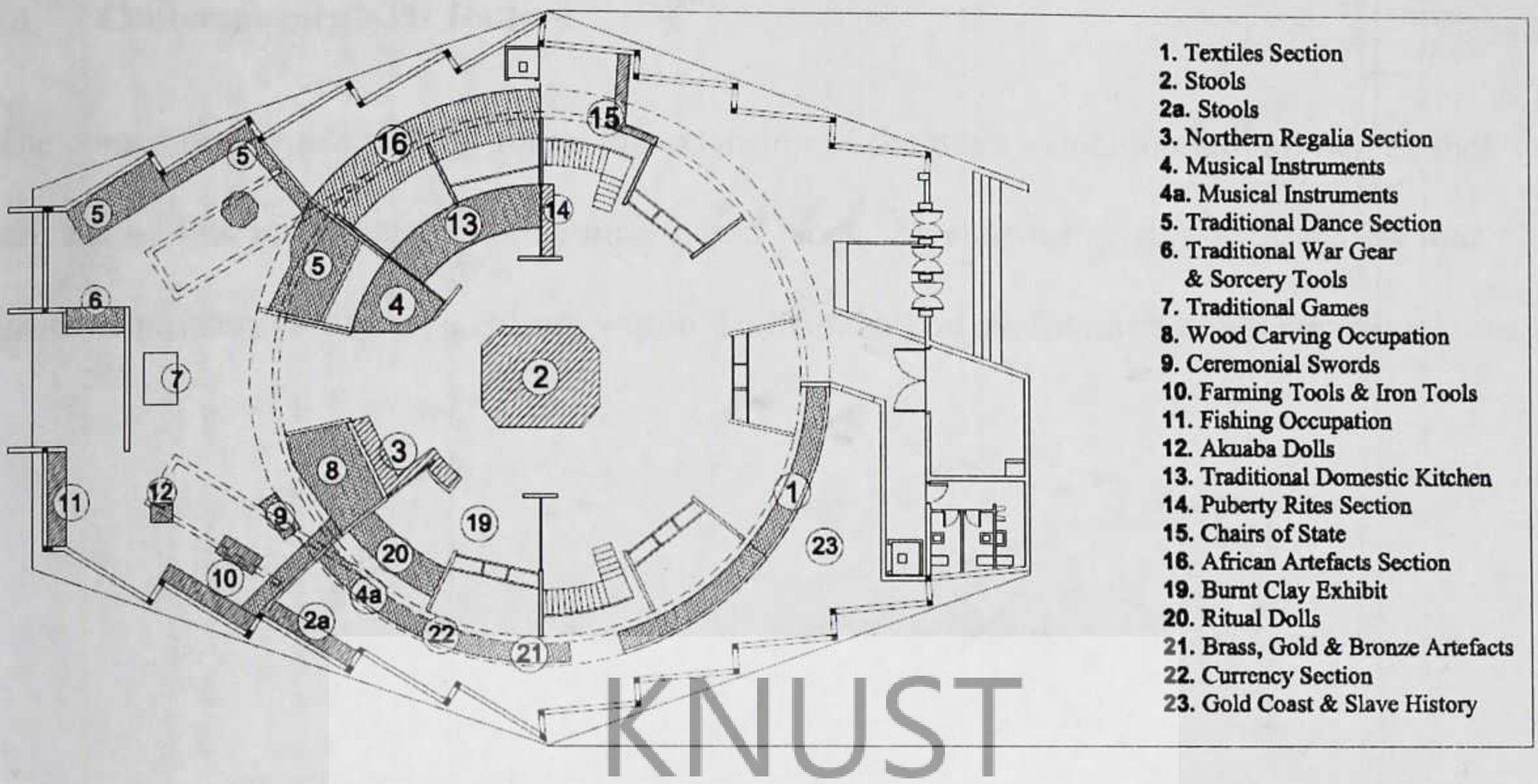

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Figure 4.8: Ground Floor Plan indicating Location of Exhibits

Source: Author

ii. Archaeological Gallery

This section is situated on the top (1st) floor of the exhibition area. The exhibits are arranged to form a closed ring that looks down unto the central area of the ground floor. Access to and from this section is by two stairs situated on either end of the main east-west axis.

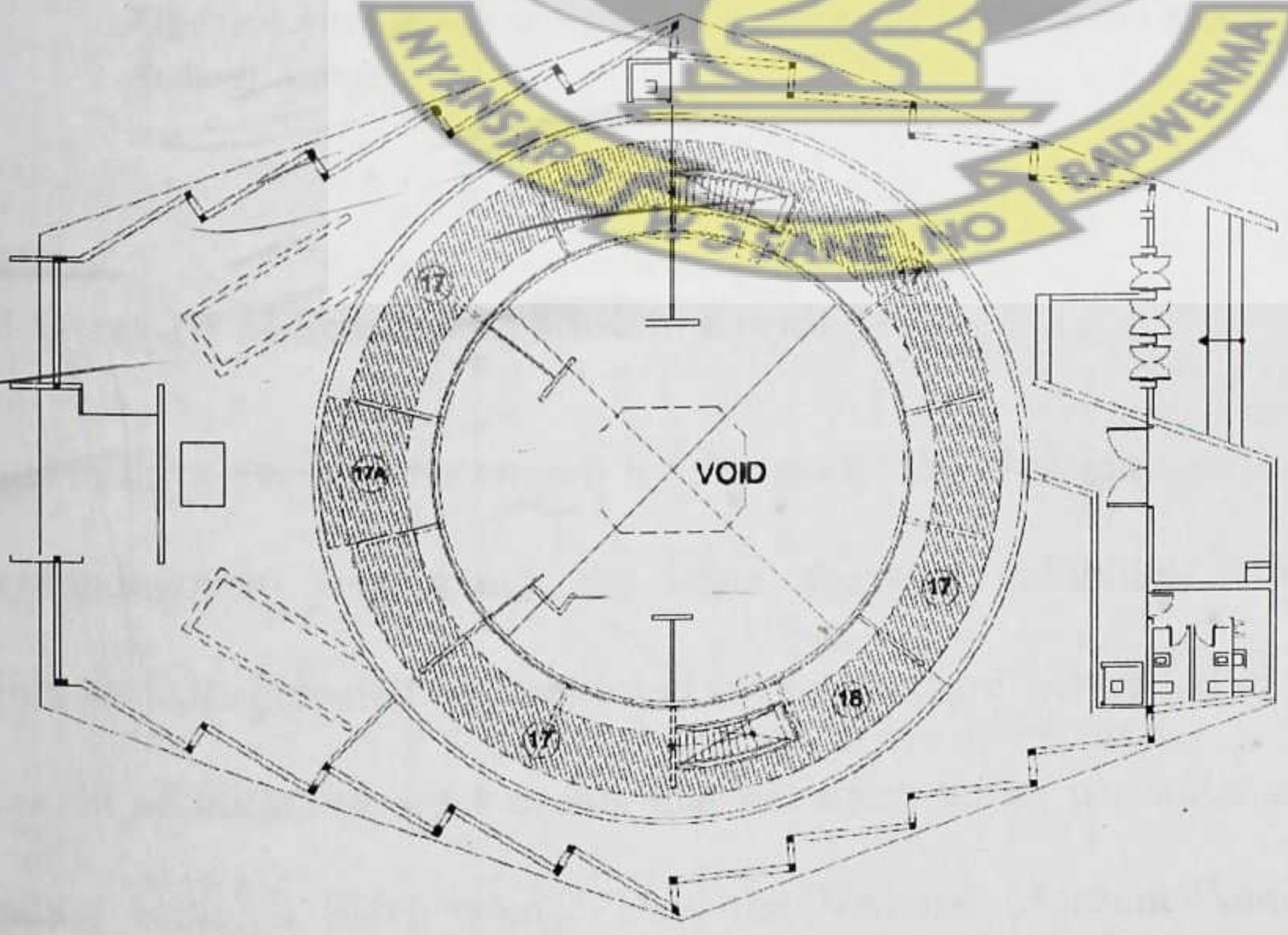

Figure 4.9: First Floor Plan indicating Location of Exhibits

Source: Author

iii. Contemporary Arts Gallery

The contemporary arts section forms the extension of the main exhibition hall as well as the connecting link to the museum's administration block. As shown in figure 4.10, access into the contemporary arts section is from within the main hall on the far north of the main axis.

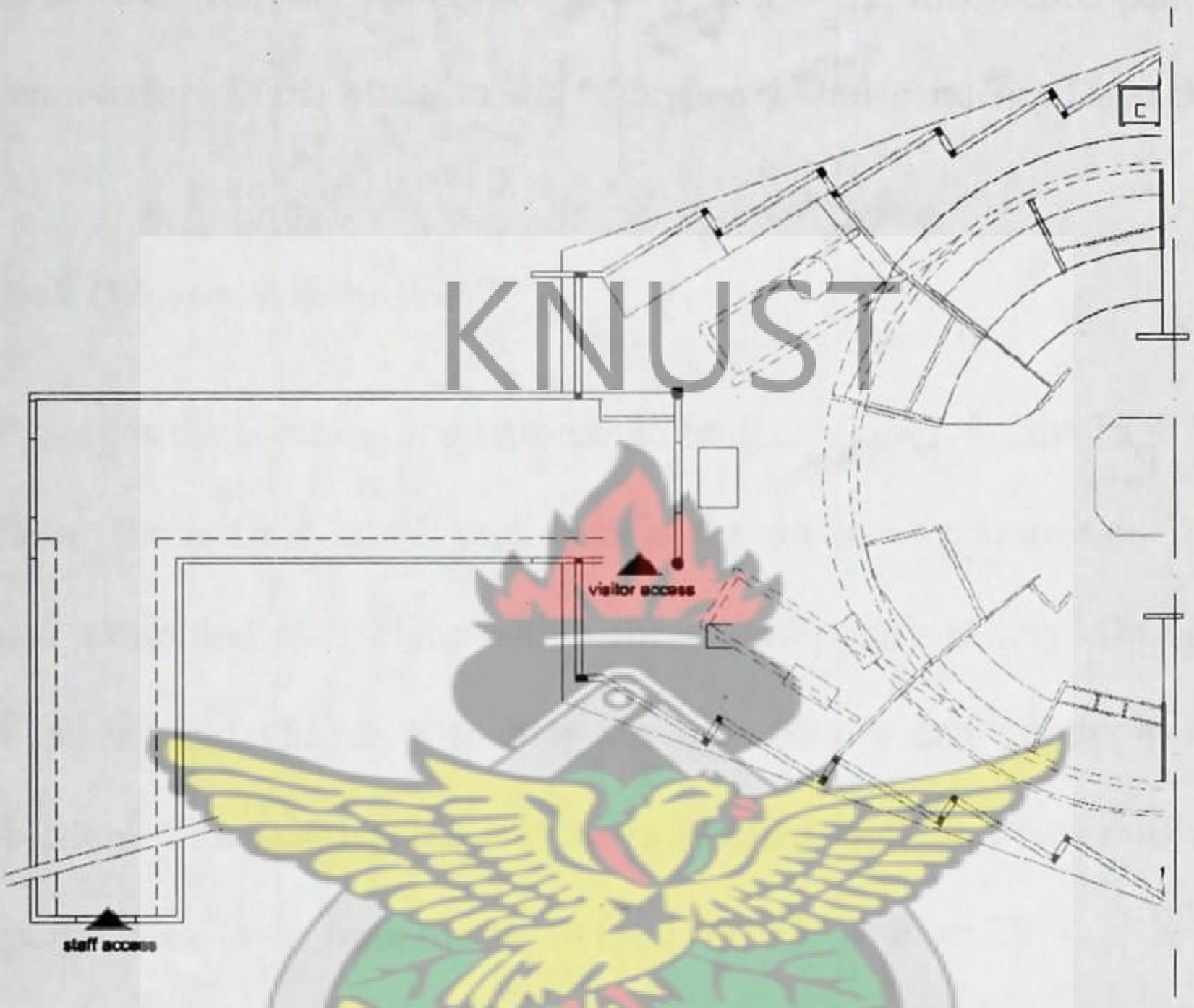

Figure 4.10: Layout of Arts Gallery showing Linkage to Ethnographic Gallery
Source: Author

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4.3.4 Overview of Selected Exhibition Events

A total of three events were chosen for this study: the Museum's permanent exhibition which runs continuously year round, the Black Odyssey exhibition and the Renaissance art exhibition. Data gathered was collected over a standardised period of one week for all three events. In addition, museum events that occurred during particular and significant periods including National Independence Day, the National Museum Anniversary and National Culture Day were also taken into account for special studies.

i. The Permanent Exhibition

This comprises the museum's ethnographic and archaeological exhibition which takes place within the main gallery on two 2 floor levels. Two sets of data were collected for two (2) different periods. The first of these periods was from the 5th to the 11th of October, 2011. The second period was from the 3rd to the 9th of March, 2012; this second period coincided with the 55th anniversary of the Museum and Ghana's own Independence Day celebration.

ii. The Black Odyssey Exhibition

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The Black Odyssey is the caption for a two-month long exhibition for the High Vibes Music Festival in Ghana. The festival launch took place at the museum's premises on 3rd November 2011. The main exhibition took place within the contemporary gallery. On display in the museum were pieces and imagery depicting the epic history and development of 'Black' music in celebration of musical legends who have left their mark on Black music worldwide. The research period took place from the 5th to the 11th of November 2011.

iii. The Renaissance Exhibition

This was an arts exhibition by a Ghanaian artist, Serwaa A. Bonsu, which ran from the first week of February 2012 for six (6) weeks. The exhibition was held within the contemporary art gallery. The works were mainly paintings in mediums such as acrylics, pastel and charcoal. Visitors were also allowed to make purchases of the paintings. The research was conducted from the 3rd to the 9th of February 2012.

4.3.5 Demographic Study

Two hundred and thirty-eight (238) visitors were present at the Permanent exhibition, two hundred and fifty-four (254) were recorded at the Black Odyssey exhibition and sixty-seven (67) were recorded at the Renaissance exhibition during 10:00 a.m. and 4:30 p.m. each day.

Types of Visitors: The types of visitors present at all 3 events included single adults, single youth, adult and youth groups, adult groups only as well as youth groups only. All three events recorded highest participation by adult visitors. Both the Permanent and Black Odyssey events had a large attendance of adult groups with 46% and 36% percentage distribution respectively. The Renaissance exhibition recorded a larger attendance by single adults (57%). When asked why they preferred coming in groups, most visitors remarked that it was *'more fun'* and that the visit *'more interesting'* when experienced with someone else. One adult visitor said, *"I wanted to spend a nice time with my girlfriend and other friends and also learn something interesting."* Chart 4.1 shows distribution of visitors for all three events.

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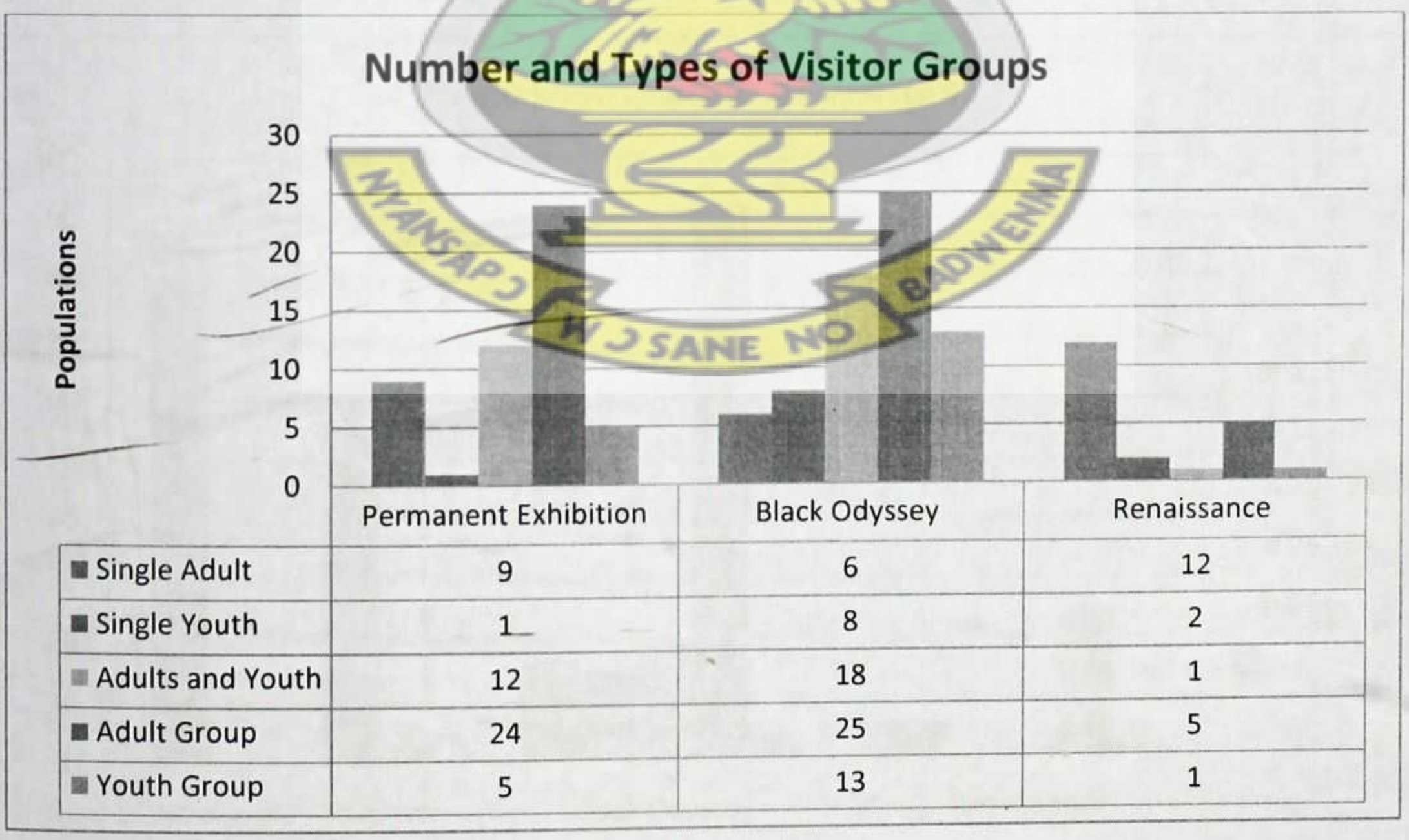

Chart 4.1: Distribution of visitor groupings
Source: Author (field survey)

Age Groups: Age classification was based on the Museum' s age grouping for admission of visitors. The age groups are primary school children (15 years and below), secondary school children (16 to19 years), university students (20 to 24 years), adults (25 to 64 years) and elderly (65 years and above). For the Permanent Exhibition, the highest recorded age group was 15 years and below (85 visitors) and adult visitors (25 to 64 years) being the second highest age group recorded. This was mainly due to the high frequency of organised school trips by Primary and Junior Secondary schools as part of their educational curriculum. The absence of 16 to 19 and 20 to 24 age groups was due to the academic period structure for most boarding schools colleges/ universities. The Black Odyssey had participation across all age groups, with the highest recorded age group being the adult bracket (25 to 64 years) with 93 visitors. The Renaissance exhibition also had its highest age record as adults (25 to 64 years) with 25 visitors. Generally, it was observed that the largest percentage of visitor for all three events were within the adult visitor bracket. Chart 4.2 shows the various age distributions.

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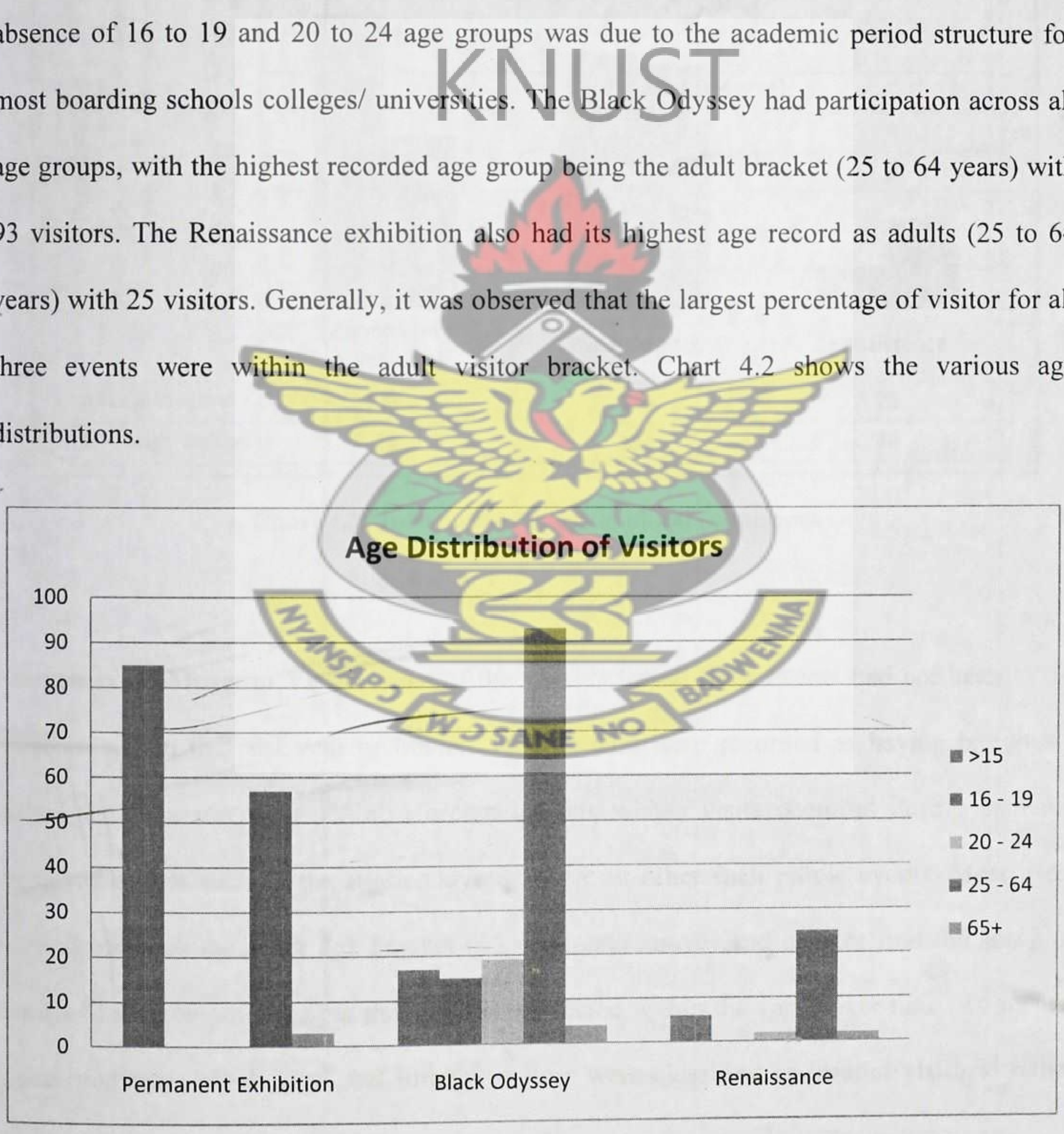

Chart 4.2: Visitor Grouping according to Ages (in years)
Source: Author (field study)

Visitor Nationality: With regards to visitor nationality, chart 4.3 shows that the Permanent exhibition recorded a higher percentage (63%) of local than foreign (37%) visitors. Most of these local visitors were primary school students. The Black Odyssey displayed an even distribution with 51% of local visitors and 49% as foreign visitors. The Renaissance Art exhibition recorded a higher presence of foreign visitors (69%) than local visitors (31%).

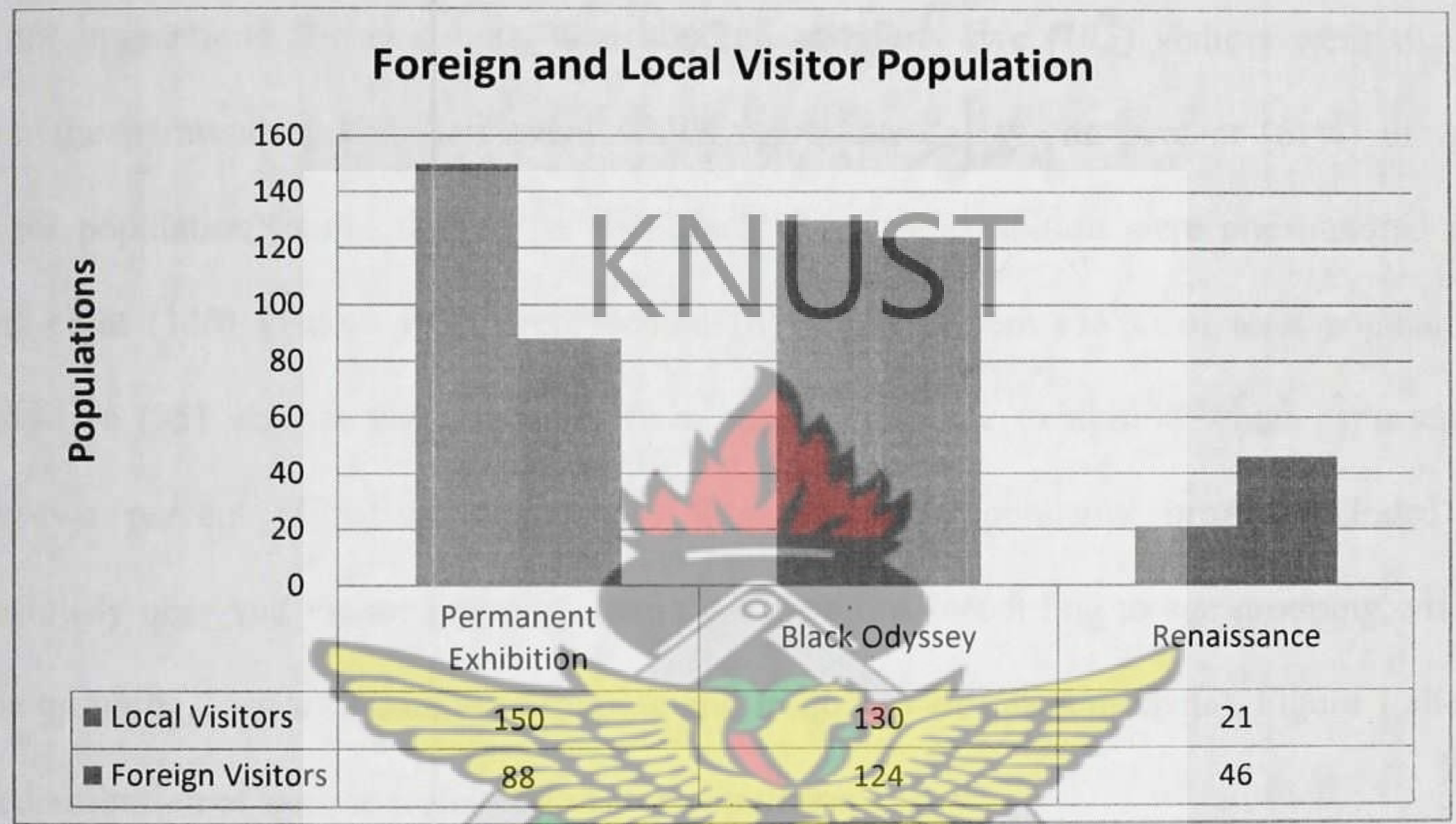

Chart 4.3: Total number of foreign/local populations
Source: Author (field study)

Frequency of Museum Visits: Most of the visitors for all three events had not been to the Museum within the past year or longer. Visitors who were recorded as having previously visited the Museum were mainly foreign tourists whose visits occurred during annually organised events such as the Black Odyssey event or other such public events. Most users were also within the older age bracket (65 years and above) and did not find the space as familiar due to certain changes that had been effected within the space over time. As such, a higher number of both local and foreign visitors were classified as **'model visitors'** rather than **'model users'**.

4.3.6 Respondents' Profile

Since the main focus of the study was that of visitor interactions, the target respondents for all three exhibition programmes were mainly the visitors of the museum. Altogether, observation studies and interview data were gathered from three hundred and twenty-eight (328) visitors. Two (2) tour-guides were also interviewed to gather staff impressions of visitor interactions during events. One hundred and forty-five (145) visitors were studied from the permanent exhibition event which represented sixty-one percent (61%) of total visitor population; study sample for the Black Odyssey exhibition were one hundred and forty-eight (148) visitors which represented fifty-eight percent (58%) of total population; thirty-five (35) visitors were sampled from the Renaissance exhibition which represented fifty-two percent (52%) of total visitor population. Respondents' profile included all previously observed visitor groupings and classifications (according to age grouping, visitor type grouping, visitor nationality grouping and frequency of museum visits). Figure 1 shows the distribution of sample from total visitor population.

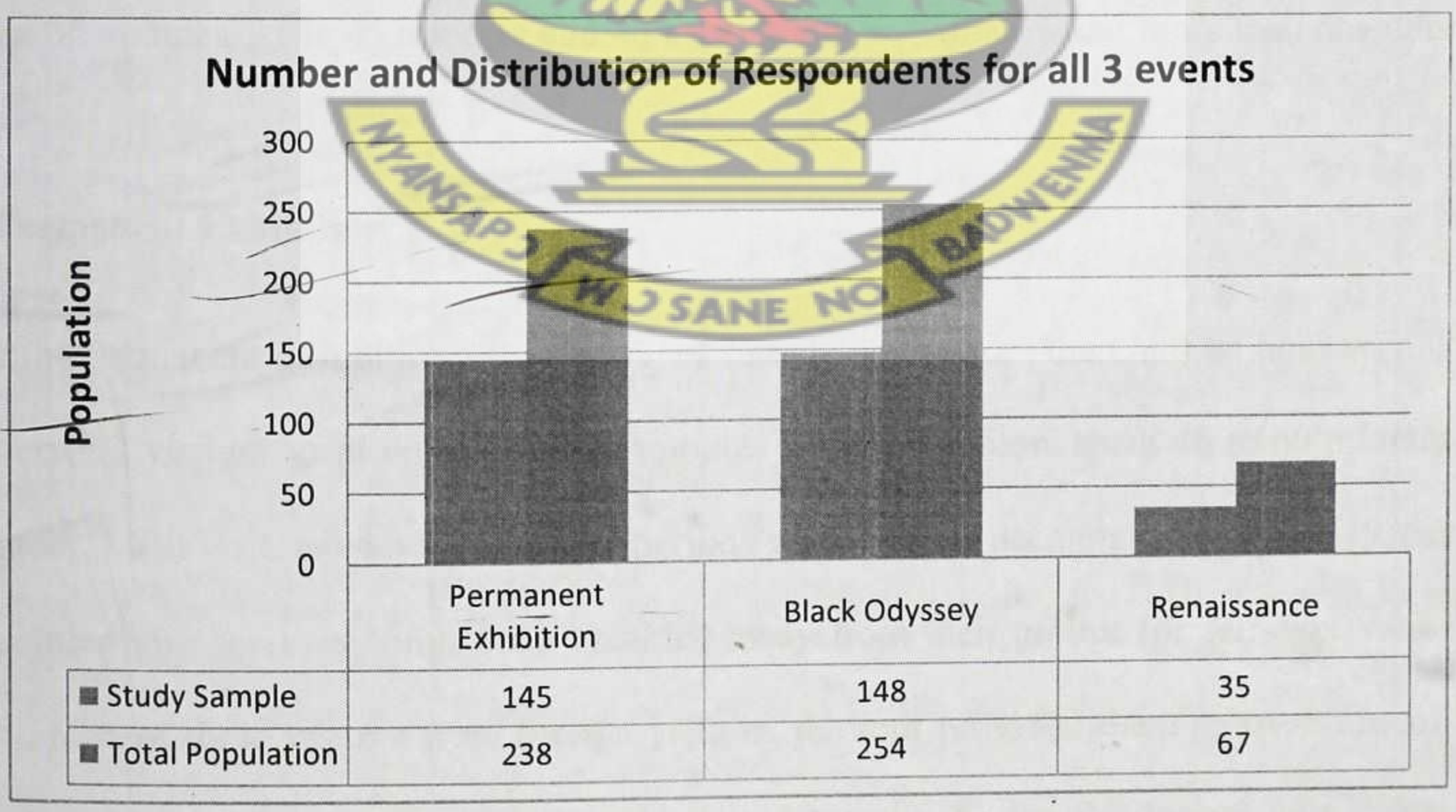

Chart 4.4: Total number of respondents
Source: Author (field study)

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4.3.7 PART A: RESULTS FROM OBSERVATION STUDIES

Part A addresses the first four aspects of the theoretical framework: accessibility, visitor movement and circulation, visitor behaviour and actions, social interactivity and communication. This section of the study discusses data from the observation study conducted on all the three exhibition events. Sample visitors were tracked and observed during the period of their visit for the three exhibition events. The results of the study for the Permanent Exhibition are presented alone while the results of the study for the Black Odyssey and Renaissance exhibit are presented together in a shared section since both events were held within the same gallery. Special studies are also presented for the ethnographic and archaeological galleries during particular significant periods which are Museum Anniversary Day, National Independence Day, and National Culture Day.

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i. VISIT DURATIONS

For all study periods, time spent by visitors was divided into four durations: 1 to 15 minutes, 16 to 30 minutes, 31 to 45 minutes and 46 to 60 minutes. No one spent more than one hour.

a. Permanent Exhibition

For the Permanent Exhibition study, 83% of sample spent more than half an hour within the gallery. 92 visitors spent up to 30 to 45 minutes while 29 visitors spent 46 to 60 minutes on the tour. Most visitors who spent longer periods were visitors accompanied by tour guides on structured tour sessions before later breaking away from their groups for self-exploration as well. 68% of these visitors were foreign visitors; the tour provided them an overview of the local artefacts. Some of the other reasons cited by sample for the longer tour durations included interest in particular artefact/ exhibit, delay in reading from information panels,

interactions with other visitors and splitting-up of some group visitors for separate tour experiences. Children also spent longer periods of time self-exploring the exhibition as well; they did not spend long periods at exhibits, but continuously revisited them at intervals. Chart 4.5 shows the amount of time spent by sample during the Permanent Exhibition while Table 4.1 shows the main reasons visitors spent longer periods within the exhibition gallery.

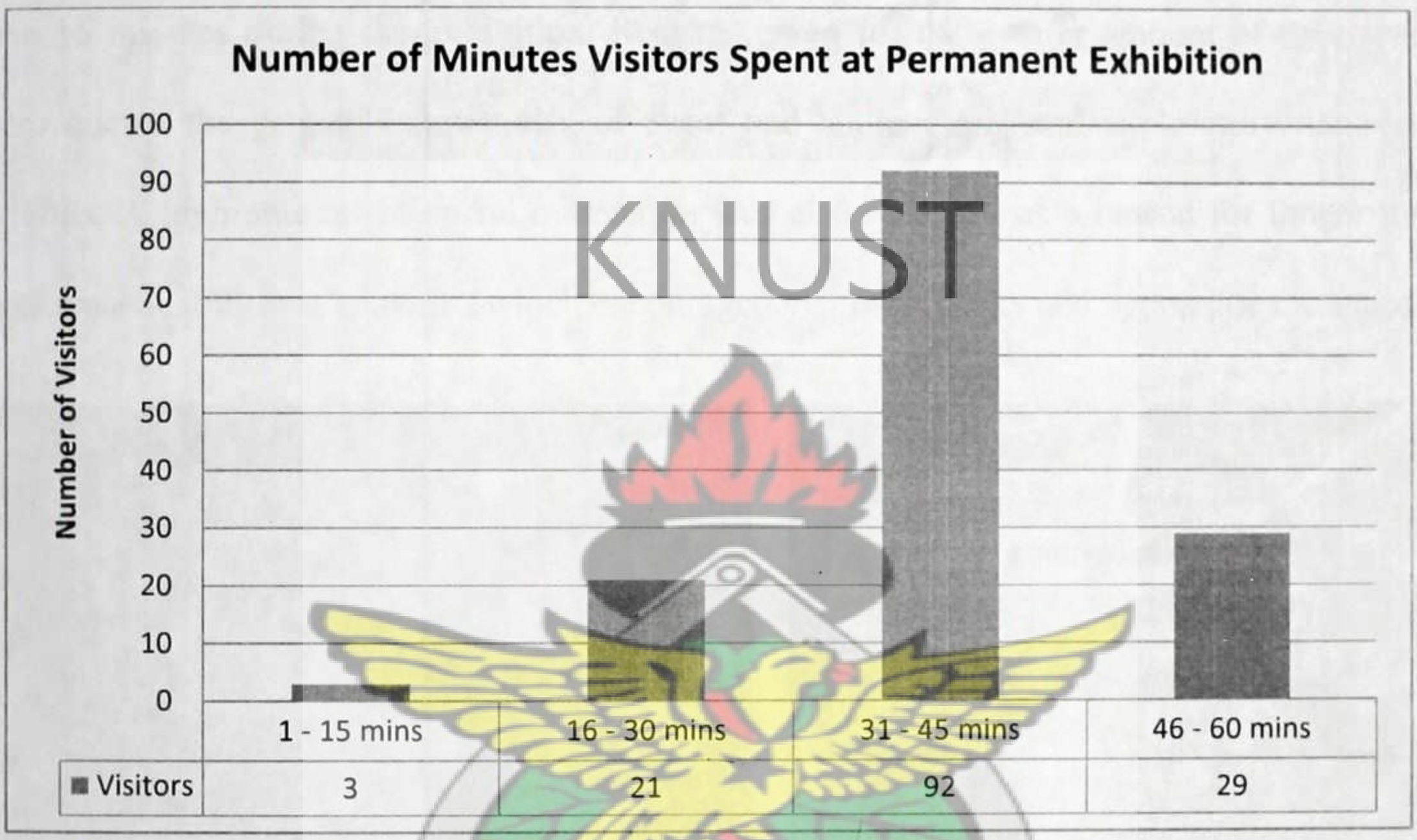

Chart 4.5: Tour durations of sample during the Permanent exhibition
Source: Author (field study)

Reasons cited by visitors	Frequency	Percentage (%)
Guided Tour experience	102	50.5
Interest in artefact/ exhibit	20	9.9
Delay in reading from information panels	19	9.4
Interaction with other visitors	36	17.8
Self-exploration by group visitors	25	12.4

Table 4.1: Reasons cited by sample for spending longer time periods
Source: Author (field study)

b. Black Odyssey and Renaissance Exhibitions

Chart 4.6 shows the amount of time spent during both the Black Odyssey and Renaissance Art exhibitions within the contemporary gallery. For the Black Odyssey event, 94.5% of visitors spent more than half an hour during event. 102 visitors were observed to have spent 46 to 60 minutes in the gallery while 38 visitors spent 31 to 45 minutes; no visitor spent less than 16 minutes during the exhibition. Reasons given for the greater amount of time spent were due to the general interactivity of event and audio-visual and exploratory nature of exhibits. A high amount of social interaction was also recorded as a reason for longer tour durations. Seating was provided which encouraged visitors to relax and appreciate the space.

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Figure 4.11 Visitors during Black Odyssey exhibition
Source: Author (field study)

Figure 4.12 The Renaissance Art Exhibition
Source: Author (field study)

Conversely, 94.2% of visitors of the Renaissance exhibition spent less than half an hour within gallery. The most time was spent by 17 visitors for 16 to 30 minutes. No visitor spent more than 45 minutes in the gallery. The main reasons cited by visitors for short tour periods were the purchasing nature of paintings exhibited which encouraged a speedy exploration and quick decision taking; however, this failed to promote visitor interaction with exhibits. One adult visitor described the tour as *" interesting, but I didn't have enough time to actually study the paintings..just wanted to buy the one I liked before someone else did!"* Respondent 8, a

27-year-old visitor also commented, *"The paintings were very nice, but I felt it was too quiet in the gallery... there should have been more life in it"* Children also spent the least amount of time at the exhibition. When asked why, 4 out of 6 children cited an inability to relate to the exhibits. *"I don't understand what most of the paintings are about"*, said 12-year-old respondent 12. Respondent 13, another 14-year-old remarked, *"I can't see what they have written beside the painting, it should have been bigger."* 42% o f visitors suggested that purchasing should have only been allowed at the end of the exhibition event. 23% suggested that the labelling and notations should have been more legible.

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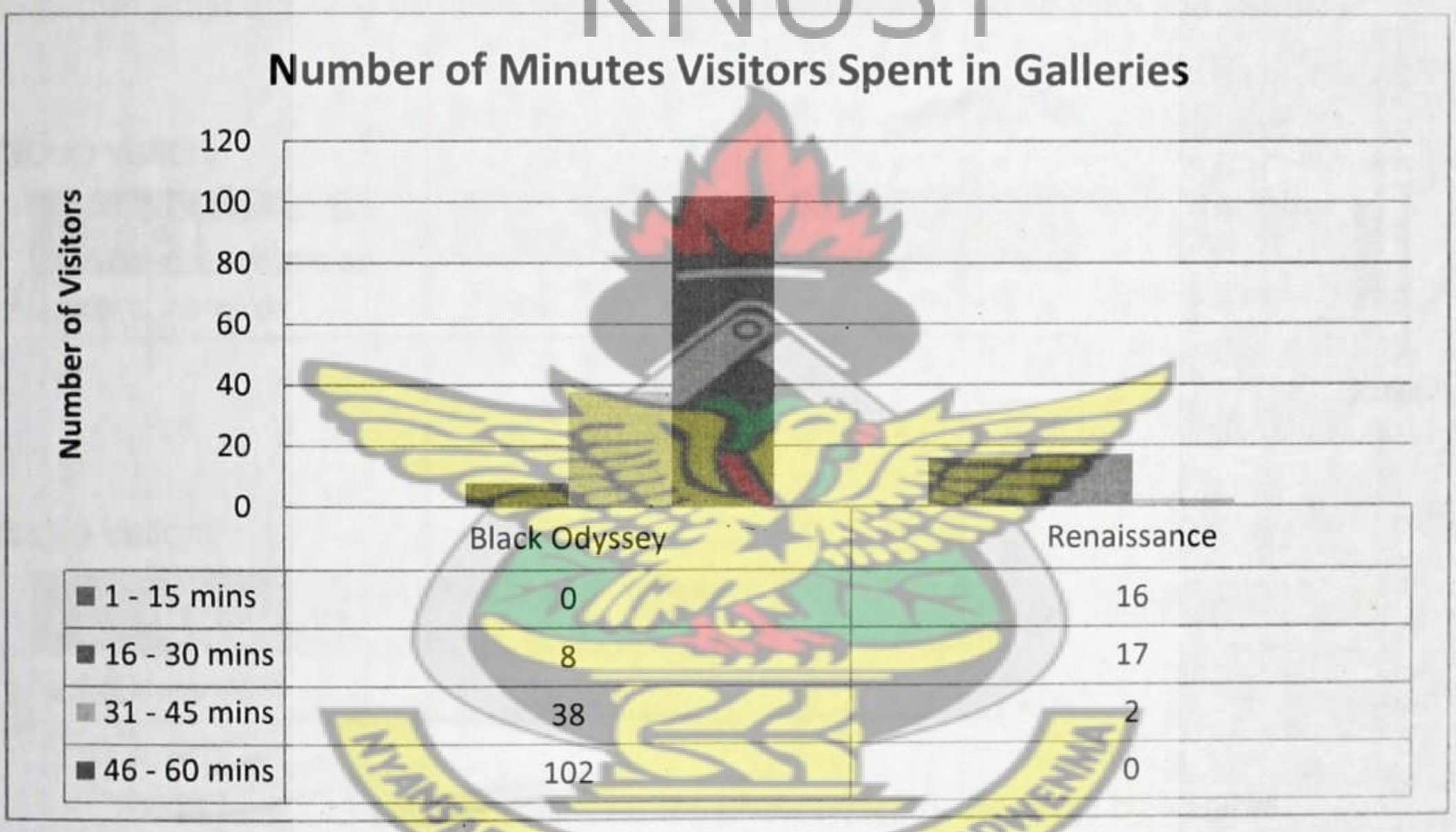

Chart 4.6: Time spent by sample in Gallery during the Black Odyssey and Renaissance events

Source: Author (field study)

c. Analysis

Figure 4.13 is a representation of the reversal in character of both single and group visitors. 73% of all group visitors stayed longer because they broke from their groups for more private experiences within the exhibition (self-exploration); private interactions accounted for at least one-third of the total time they spent. 52% of single visitors also stayed longer because they participated in some forms of public interaction; these interactions accounted for at most

15mins of their total time. Both of these reversals were experienced mid-way through the visitors' tours. For each case, the quality of the interaction was of more interest to visitors than the amount of time spent. Group visitors (foreign and adults) were not satisfied with their self-explorations. 'I couldn't seem to get a moment to myself.. I was completely surrounded.' Most visitors seeking personal time soon left to the contemporary gallery which seemed more isolated. Single visitors especially adults had not been satisfied with the quality of public interactions at the exhibition either. 'There is virtually nothing to do in a group. I'm sort of shy so don't approach people but it would have been nice if there were some activities or something that allowed us to sit together or discuss things we've seen and learnt.'

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Figure 4.13 Distinct Character Reversals typically displayed by Visitors

Source: Author (field study)

Within the Black Odyssey event, most visitors experienced more public than private interactions. This high amount of social interaction was due to the nature of the exhibition which kept visitors in constant interaction with one another. The interactions varied with respect to the exhibits on display or with respect to visitors' personal connections. A few visitors sought some personal time by way of sitting in isolated areas of the space or listening to music with headphones provided by the exhibition. In this case, the quality of both interactions proved adequate for guests and encouraged longer periods of stay in the gallery.

In stark contrast at the Renaissance exhibition, there were almost no public interactions observed. Visitor tour durations as such were much shorter than for the other 2 tours because of the poor quality of private interaction and the marked absence of public interaction.

Figure 4.14 Distinct Character Reversals typically displayed by Visitors
Source: Author (field study)

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ii. VISITORS' ACCESS

a. Permanent Exhibition

Access into Gallery: During the Permanent exhibition it was observed that most visitors could not easily access the main gallery from the reception point. On an average, it took group visitors 8 - 10 minutes to access the gallery. Most found it frustrating and uncomfortable when using the turnstile access. 67% of visitors complained that the main access was *"too small"*.

Access to Exhibits: The general impression most visitors gave was that it took *'too long'* to have access to exhibits. It was observed that most visitors experienced difficult access to over 56% of exhibits and artefacts due to space and delays caused by other visitors. Typically, group visitors took the longest time to explore exhibits and also occupied the most space around the exhibit/artefact. In observing an adult group of 6, it was discovered that each visitor in the group took their turn in reading from the information panel before leaving a

particular exhibit. The position and arrangement of artefacts and information panels meant it was difficult for artefact and information to be viewed separately. With a group of 6 children, it was observed that while they also gathered around the exhibit, only one child read from the information panel to the hearing of the others, whiles the others listened and studied artefacts. The exhibits that most visitors felt they had good access to were the dance exhibit section and the textiles section. Figure 4.16 depicts access within the dance exhibit section in figure 4.15. The exhibits were arranged in an open loop with a featured centrepiece mannequin. Information was mounted and displayed on upright boards. This section was populated by both single and group visitors. The exhibits that most visitors claimed to have the least access to were the domestic kitchen section and the African artefacts section.

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Figure 4.15 traditional dance section
Source: Author (field study)

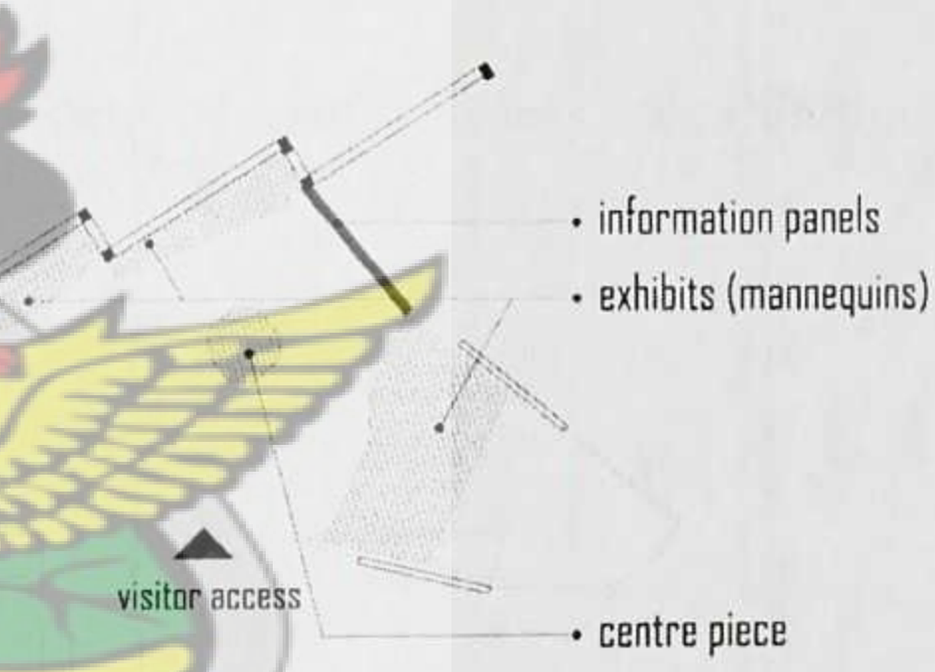

Figure 4.16 layout of dance section
Source: Author (field study)

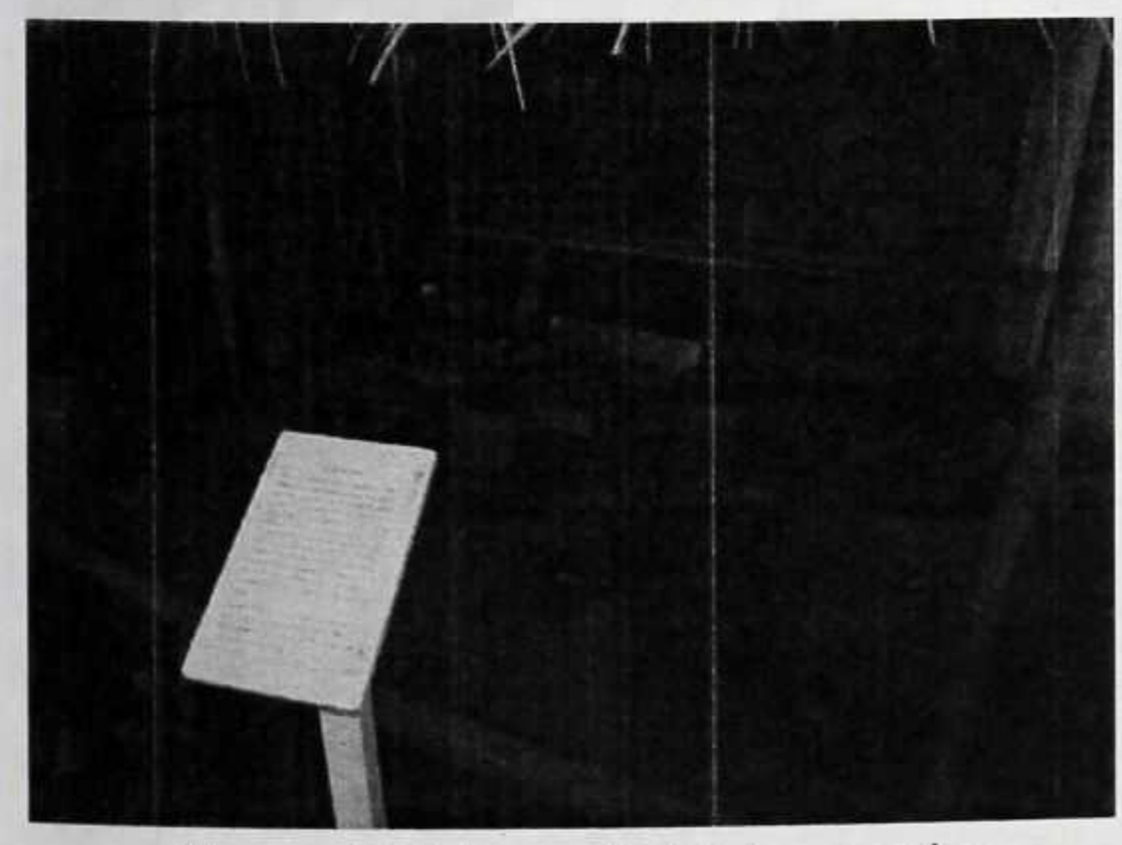

Figure 4.17 domestic kitchen section
Source: Author (field study)

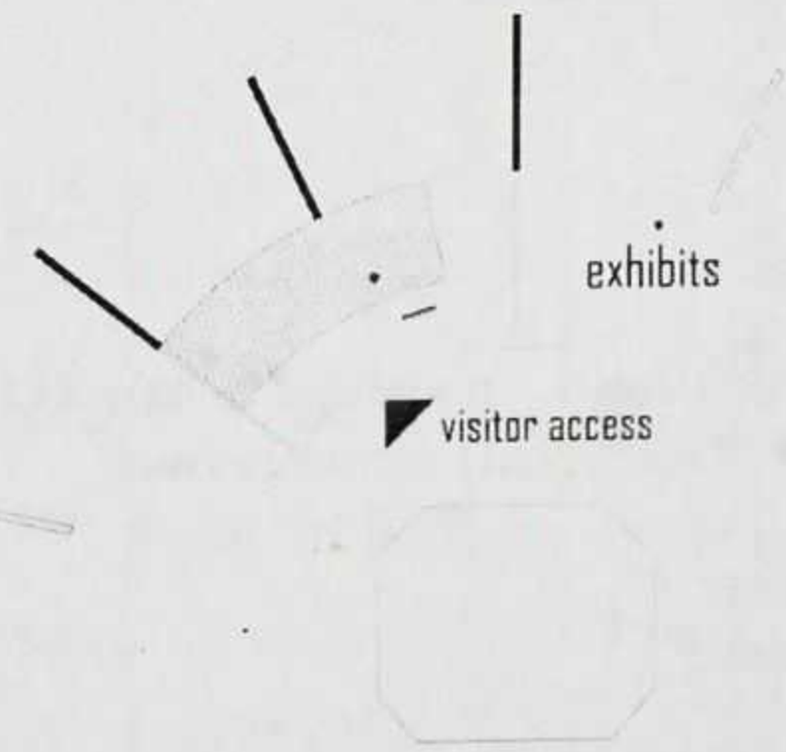

Figure 4.18 layout of kitchen section
Source: Author (field study)

b. Black Odyssey and Renaissance Exhibitions

Access into Gallery: Visitors typically experienced similar frustrations at the reception point as visitors who were at the Permanent exhibition.

Access to Exhibits: At the Black Odyssey exhibition, 93% of visitors said that they experienced easy access to all exhibits. All exhibits and stands were arranged at intervals of 4.0 metres. It was observed that this arrangement provided adequate space for visitors to easily explore and circulate; while one visitor interacted directly with the exhibits (through headphones), a maximum of 3 other visitors could watch the visuals from the screen panel. All information on exhibits were mounted on the gallery walls and were positioned between 2 exhibit stands. This made the information easily visible to visitors even from a distance. The conceptual layout diagram (Figure 4.20) depicts the extent of visitor access to exhibition stands.

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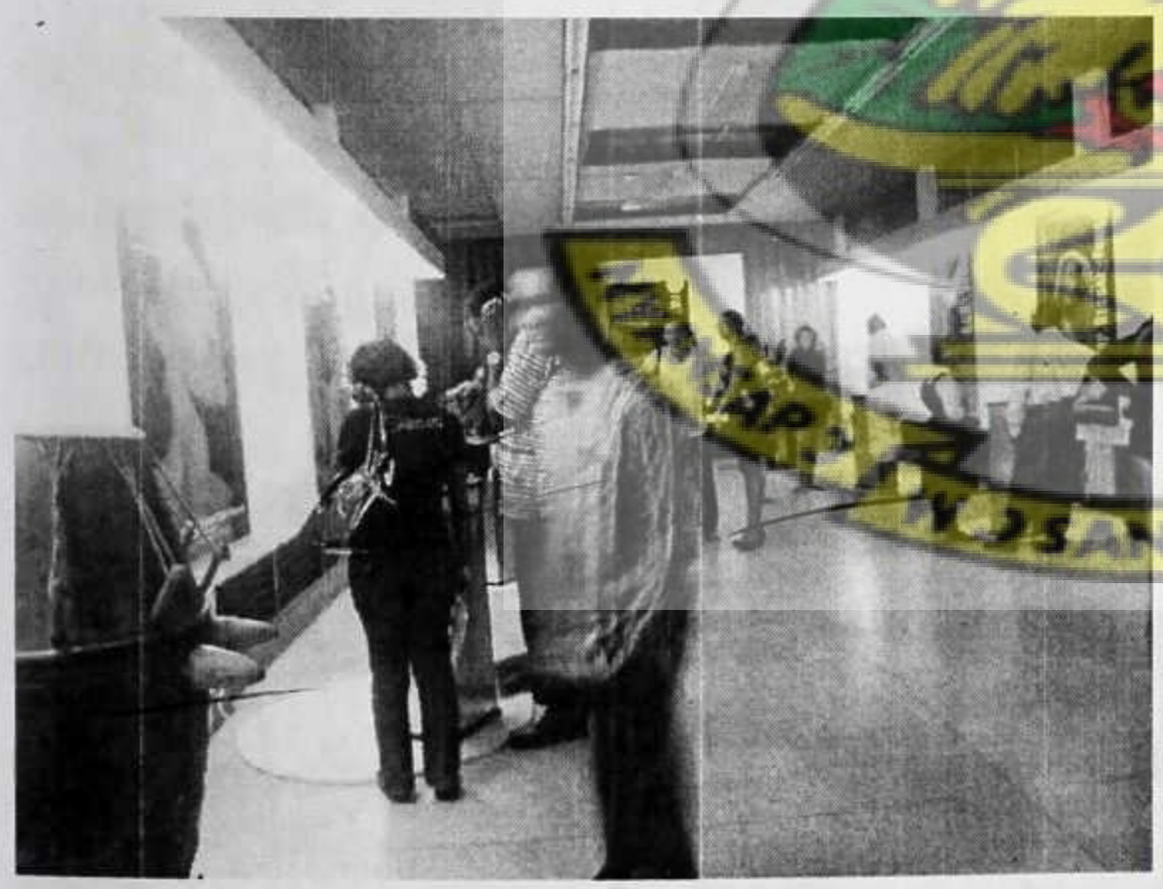

Fig. 4.19 access to exhibits - Black Odyssey
Source: Author (field study)

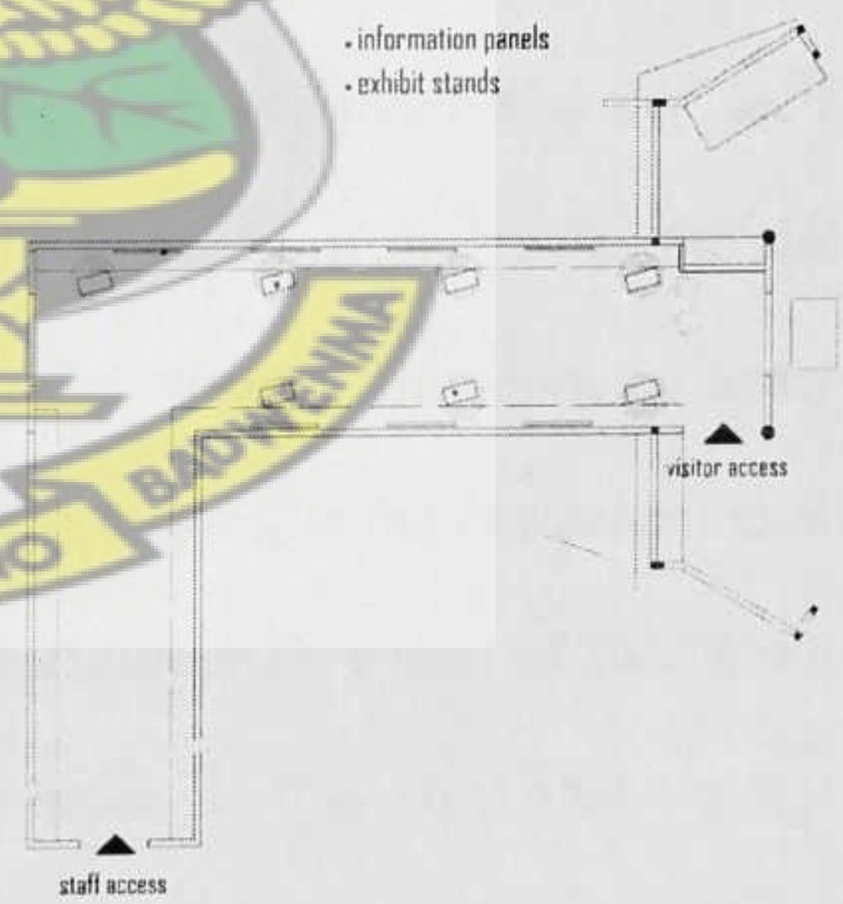

Fig. 4.20 layout of exhibition - Black Odyssey
Source: Author (field study)

At the Renaissance exhibition, access was also good but the purchasing nature of the exhibition meant that the exhibits became quickly unavailable for viewing by other visitors.

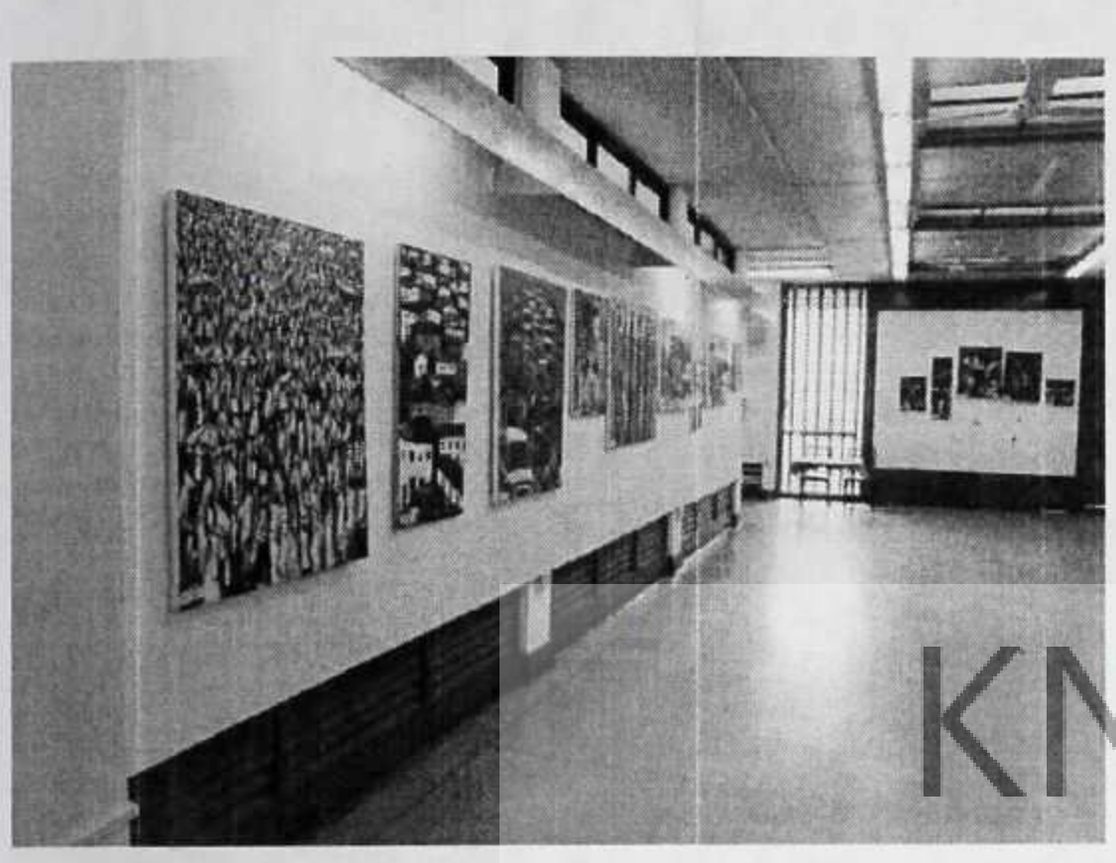

Figure 4.21 exhibits arrangement - Renaissance
Source: Author (field study)

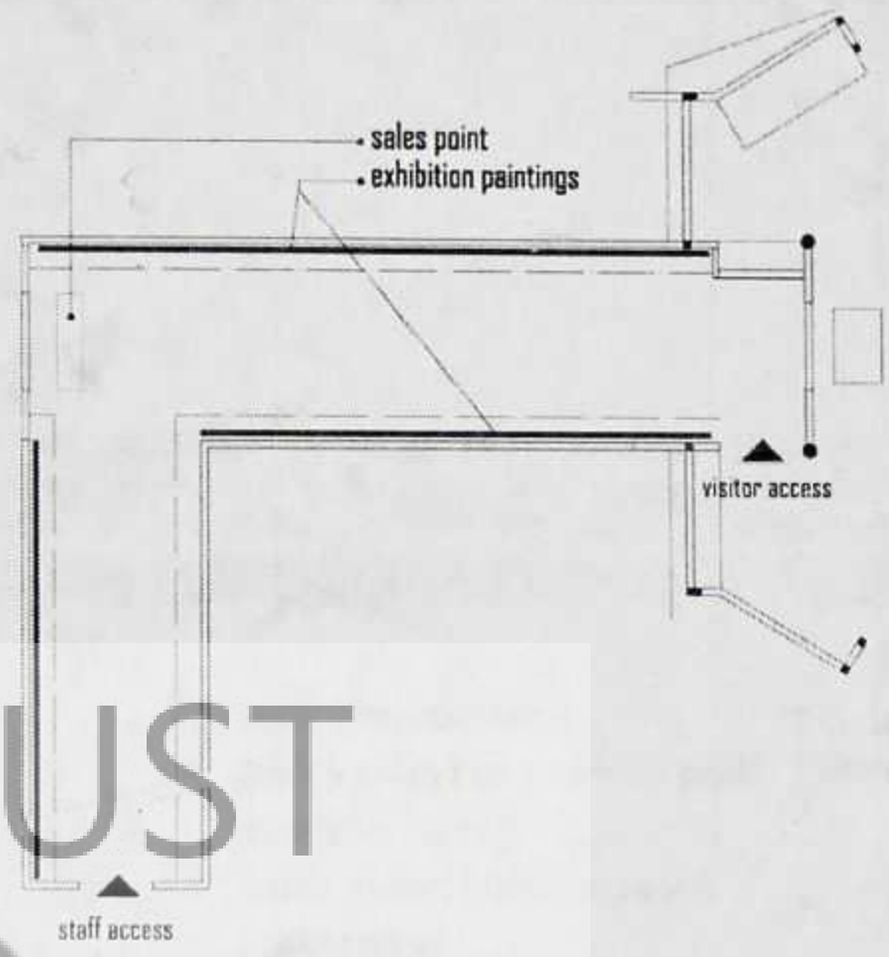

Figure 4.22 exhibits arrangement - Renaissance
Source: Author (field study)

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c. Analysis

The accessibility to exhibits for both the Black Odyssey and Permanent exhibitions both showed characteristics of '*multi-accessibilty*' because they permitted a wider section of visitors (both group and single visitors) at a time.[1] Multi-access is defined as the ability to gain access to certain exhibits at the same time as other visitors. However, an analysis of sections from each of the 2 exhibition galleries showed that while the Permanent exhibition was multi-accessible, it was not '*multi-functioning*'. In Figure 4.23, a total of 25 visitors (both single and group visitors) are observed within the space. It was clear that while visitor population was contained with the space, both public and private functions seemed to overlap and visitors could not clearly identify and access defined areas to suit their individual needs (private or public functions). As such, the space seemed congested and lacked clear focus on visitors' access to exhibits. On the other hand, within the Black Odyssey space as shown in Figure 4.24, public and private functons were more defined which allowed visitors to readily

access and make use of the various sub-spaces. Functions did not overlap which meant that spaces were more definable than for the Permanent exhibition. As such, the exhibition space for the Black Odyssey event depicted both **multi-accessing** and **multi-functioning** qualities.

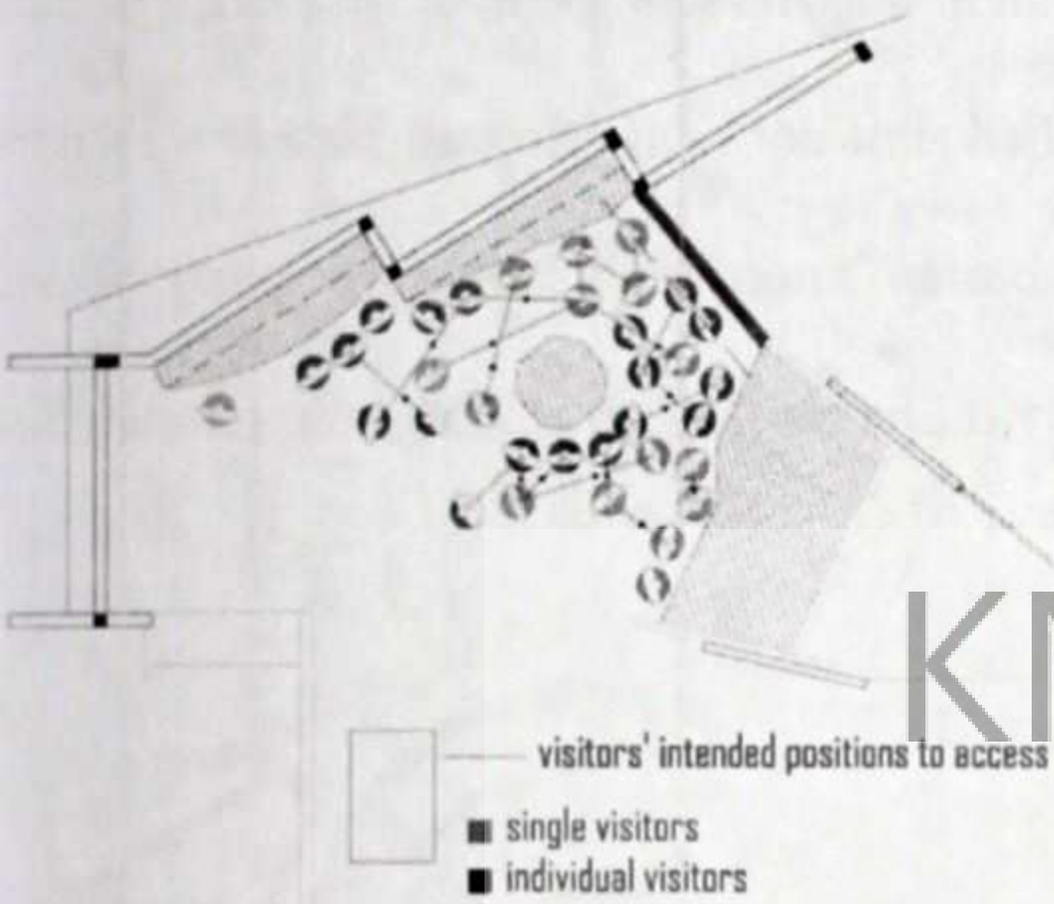

Figure 4.23 diffused function and space
Source: Author (field study)

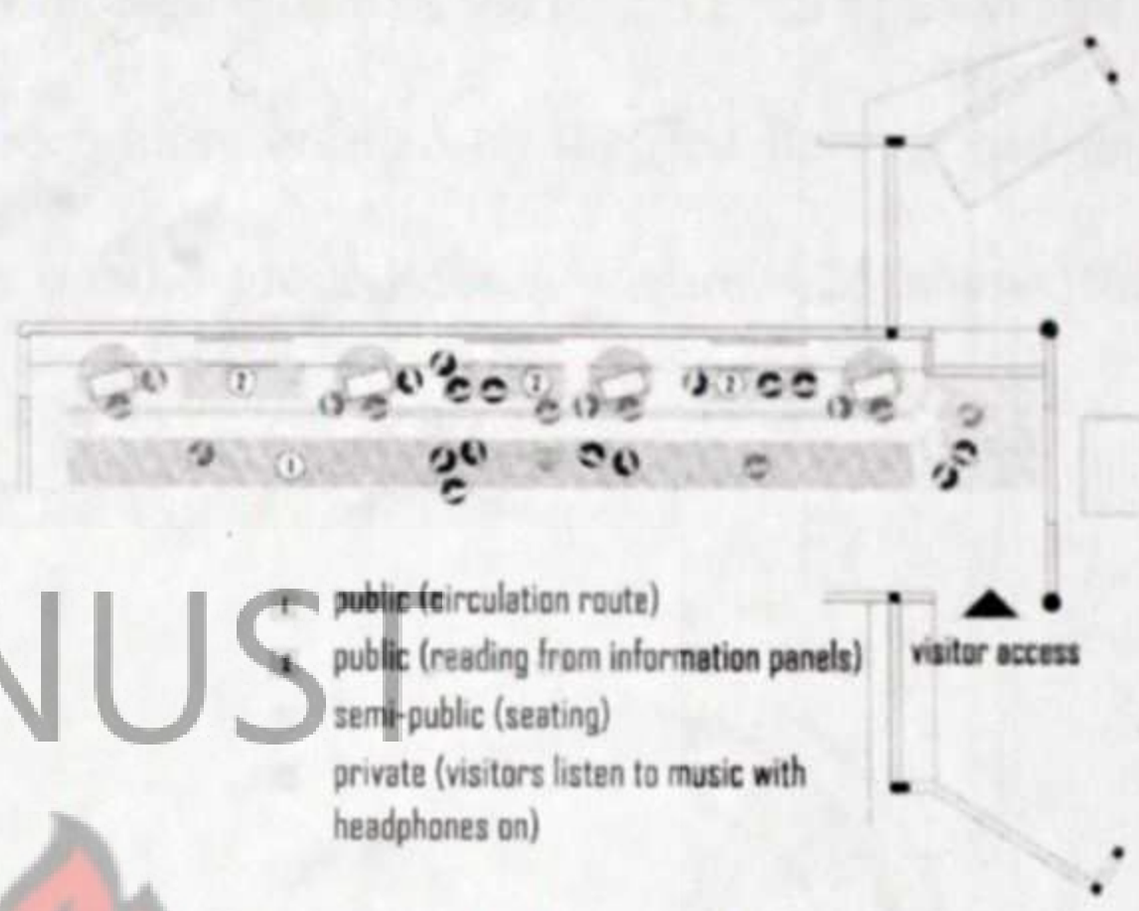

Figure 4.24 defined function and subspaces
Source: Author (field study)

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iii. VISITORS' CIRCULATION AND MOVEMENT PATTERNS

a. Permanent Exhibition

Visitors toured the space either on their own or accompanied by a tour-guide. Visitors who opted for the 'structured/tour-guide' experience were mostly organised groups such as students, foreign groups or other organisation groups; these visitors followed the intended circulation route of the tour.

Structured Tour: Figure 4.25 shows the structure of the circulation route taken by visitors. In studying visitors' movements during the structured tour, it was observed that the exhibits on ground floor had not been organised to follow the gallery's circular spatial theme. The tour which began at the exhibit labelled 1 in the layout diagram moved visitors in a brief clockwise motion, before switching to a jagged circulation pattern for the remainder of the

tour on the ground floor. 87% of visitors said that they had not perceived any unique order about the exhibition's arrangement. In the archaeological gallery on the first floor, circulation was more definite and followed the circular spatial configuration of the gallery. Visitors were able to peruse the exhibits in a circular manner along the path of the tour. 12 out of 25 visitors interviewed said that although the tour had been more ordered on the first floor, it had felt disconnected from the exhibition's narrative on the ground floor. Figure 4.25 shows the circulation path on the ground floor and first floor.

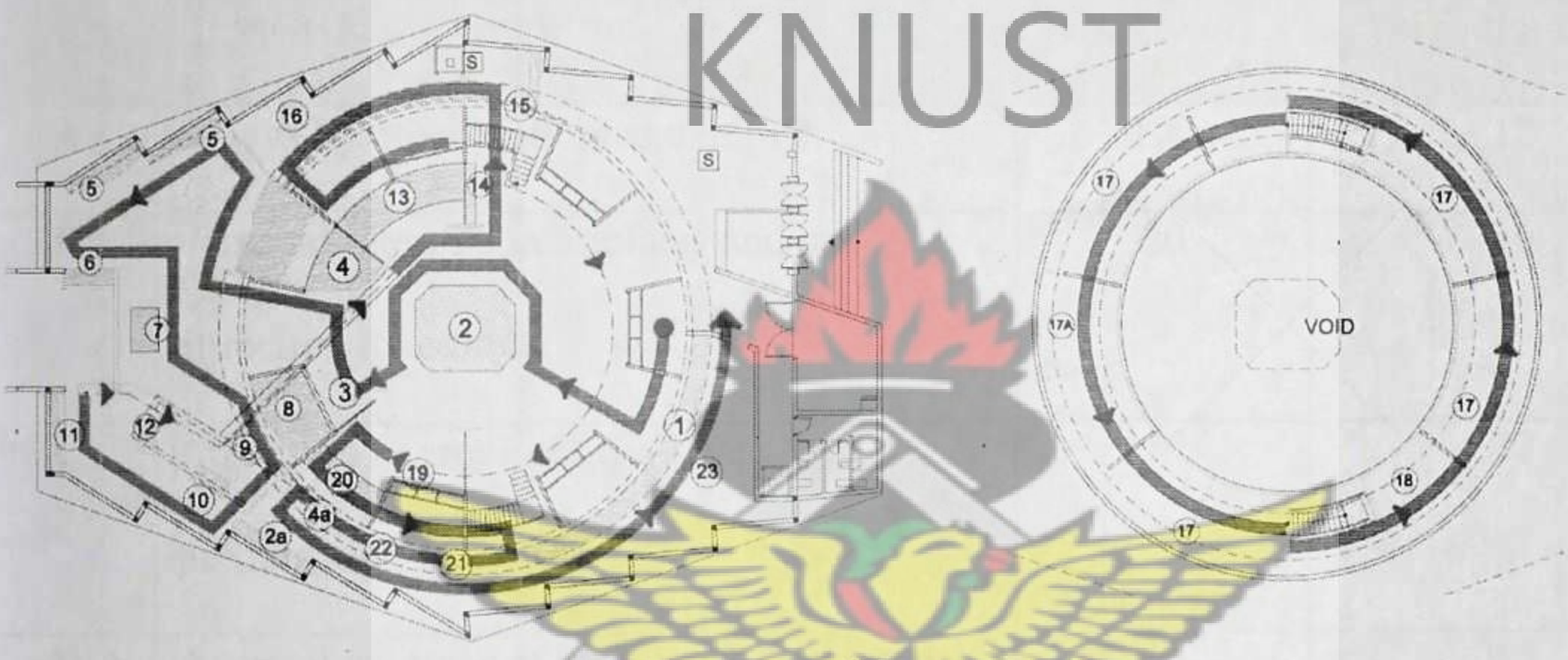

Fig. 4.25 Circulation route of structured tour on ground floor (left) and first floor (right)
Source: Author (field study)

Independent Tour: Three-quarters of visitors typically opted for a self-exploratory experience and explored the exhibition on their own. Circulation was determined by which exhibit first came into view of visitors. In figure 4.25, the ground floor shows the path typically chartered by visitors who were unaided in the tour. As shown in the diagram, visitors' movement began in the section labelled 2 due to its centralised position which made it clearly visible upon entry. This movement is discussed further in the analysis section. 81% of visitors toured the first floor gallery last and 15% did not tour it at all. Visitors followed a similar circulation path as with that of the structured tour in the archaeological gallery. Out of the 75% of 'self-explorers', 72% of visitors deviated from the typical circulation route. Visitors interviewed said they deviated because of delays caused by other visitors at exhibits,

attraction to interesting exhibits that had caught their attention, attraction to areas where there was seemingly high participation by other visitors etc. Reasons for the variations in circulation are highlighted in Table 4.2. The variations to the typical visitor path are also shown in analysis (Figure 4.28) where the circulation routes of independent visitors are overlaid against the typical structural circulation. The remaining 3% of independent visitors unconsciously followed the structured tour by observing and following largest concentrations of visitors.

Class	Reasons cited by visitors	Frequency	Percentage (%)
A	Delays by other visitors at exhibits	102	12
B	Personal interests in artefacts and/or attraction to exhibits	20	16
C	Attraction to areas of high-level participation of visitors	19	32
D	Aversion to areas of high-level participation of visitors	36	15

Table 4.2 Reasons cited by sample for spending longer time periods
Source: Author (field study)

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b. Black Odyssey and Renaissance Exhibitions

For the Black Odyssey event, all visitors explored the exhibition unaided. Typically, circulation occurred in a relatively precise order from the exhibits in closest proximity to main access of gallery to those further into the museum. Visitors generally followed the intended structure of the exhibition. Visitors were able to move freely and explored all exhibits at least twice. One visitor remarked that it had been *'very easy getting around the space.'* Adult visitors moved at a relatively gradual pace through the exhibition while

movement of children were more random. The diagram on the left of figure 4.26 shows the typical circulation pattern of visitors within the exhibition.

Circulation within the Renaissance exhibition was typically a single loop movement; visitors explored artefacts along one line of the gallery and then moved on to the other; the tour typically ended at the point of origin and visitors could either exit or take another round. Visitors movement was typically slow and sedate. This movement pattern was due to the sales nature of the exhibition which demanded a close examination of the artefacts by potential buyers. Most visitors repeated the tour because they had been unsure in making their purchases. Figure 4.26 (right) shows typical circulation pattern of visitors within the gallery space.

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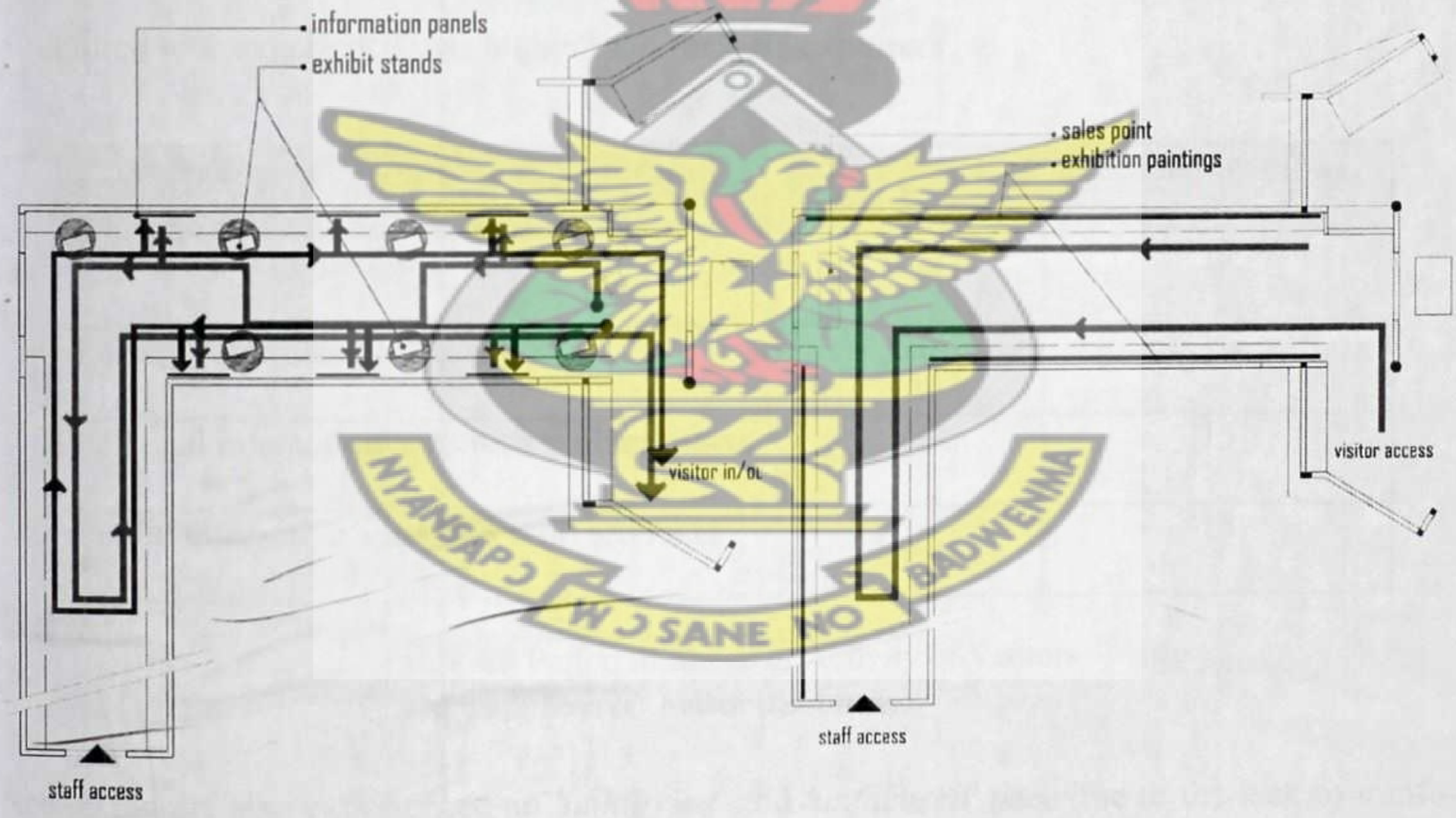

Fig. 4.26 The typical circulation routes of visitors Black Odyssey (left) and Renaissance (right) events
Source: Author (field study)

c. Analysis

Circulation and movement were analysed according to the ease and pace of movement, orientation of visitors as well as the types of intersections in circulation.

Circulation Pace: For all 3 events, visitors' movements were either leisurely or sluggish. Only children's movements were more rushed and sporadic. In analysing movement for the Permanent exhibition, it was realised that the circulation pace of most visitors was *'unhurried'* and *'unfocused'*. One reason for this was due to the frequency of fatigue/tiredness, mostly experienced by visitors within the structured tour. One group of visitors within the structured tour had said that while informative, they had experienced periods when their attention drifted from the tour guide to personal conversation. *'Really wanted to listen to what was being said but I was just so tired of walking and walking... there was no break!' 'What else is there to do..?'*, exclaimed another adult male. The frequency of fatigue was due to the lack of range of activities for visitors along the tour. Table 4.3 below shows visitors' preference for higher range of activities while on the tour. The frequency of fatigue in visitors on the structured tour experience was higher than for 'self-explorers'.

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Preferred activity range for visitors	Frequency	Percentage (%)
Listening to guided tour only	102	12
Leisure intermissions (seating)	20	16
Personal interactive activities with artefacts	36	15
Public interactive activities with artefacts	36	15

Table 4.3 Preferred Range of Activity of Visitors

Source: Author (field study)

Self-explorers also experienced an *'unhurried'* and *'unfocused'* pace due to the lack of multi-access with most of the exhibits. One female visitor said, *'There was really nothing else to do... there aren't any activities so you just had to stand around and wait.'* Most other responses included the term *'boring'*. It is clear that the lack of **'multi-focus'**, defined as the range of alternate activities and/or destinations (private or public zones) was an issue for most visitors at the permanent exhibition. For the Black Odyssey event, the pace was *'unhurried'*

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but *'focused'*. Less visitors experienced fatigue or boredom because of the variety of social activities (both public and private) and the multi-accessible nature of the exhibit. For the Renaissance exhibition, the pace was 'unhurried' and 'focused'. However, the focus in pace was due to the commercial nature of the exhibit and most visitors did not feel it had had much variety of activities. The 3 events suggest the significance of a 'multi-focus' nature of the exhibition programme.

Types of Intersections: With the Permanent Exhibition, three (3) major conflict points were indentified where visitors' circulation was arrested due to width of accesses, incoming-outgoing bodily collisions as well as presence of high visitor densities. Figure 4.27 schematically indicates these main 'conflict zones' observed along the circulation path. The conflict zone 'B' was the most uncomfortable zone for most visitors due to the narrow passage space at the base of the stairway. Three separate adult visitors in the tour expressed their irritation at the time taken to gain access into that section while they were made to wait. Children reacted by showing restlessness and agitation. All three conflict zones were created due to the jagged and interweaving structure of the structured exhibition tour.

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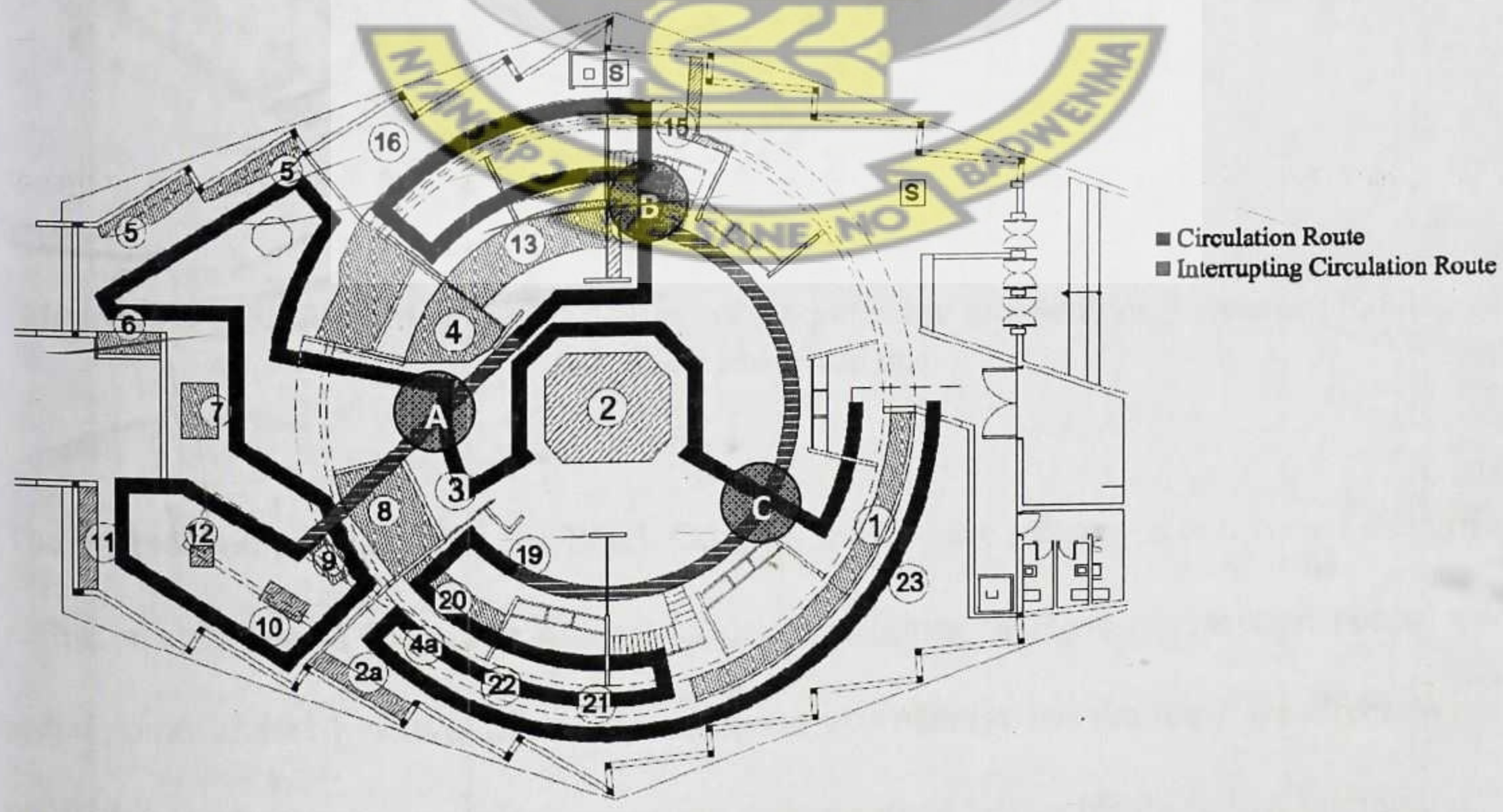

Fig. 4.27 Conflict points in circulation route for structured tour: ground floor (Permanent Exhibiiton)
Source: Author (field study)

In examining independent circulation routes, it is clear from the overlay of the various paths that despite the variations in circulation, exhibit 2 acted as the point of origin for all visitors paths due to its highly visible and central position. Most intersecting paths were conscious decisions of visitors mostly to initiate or engage in social interaction with visitor(s). These points of intersection are more positive than those within the structured tour and can be defined as being **'social points'** that promoted a more positive social experience. The observed social points have been highlighted in the layout of Figure 4.28. Frequently along each circulation route, visitors are seen to make returns trips to the central section of exhibit 2. This formed the main social point for most visitors to engage in interaction.

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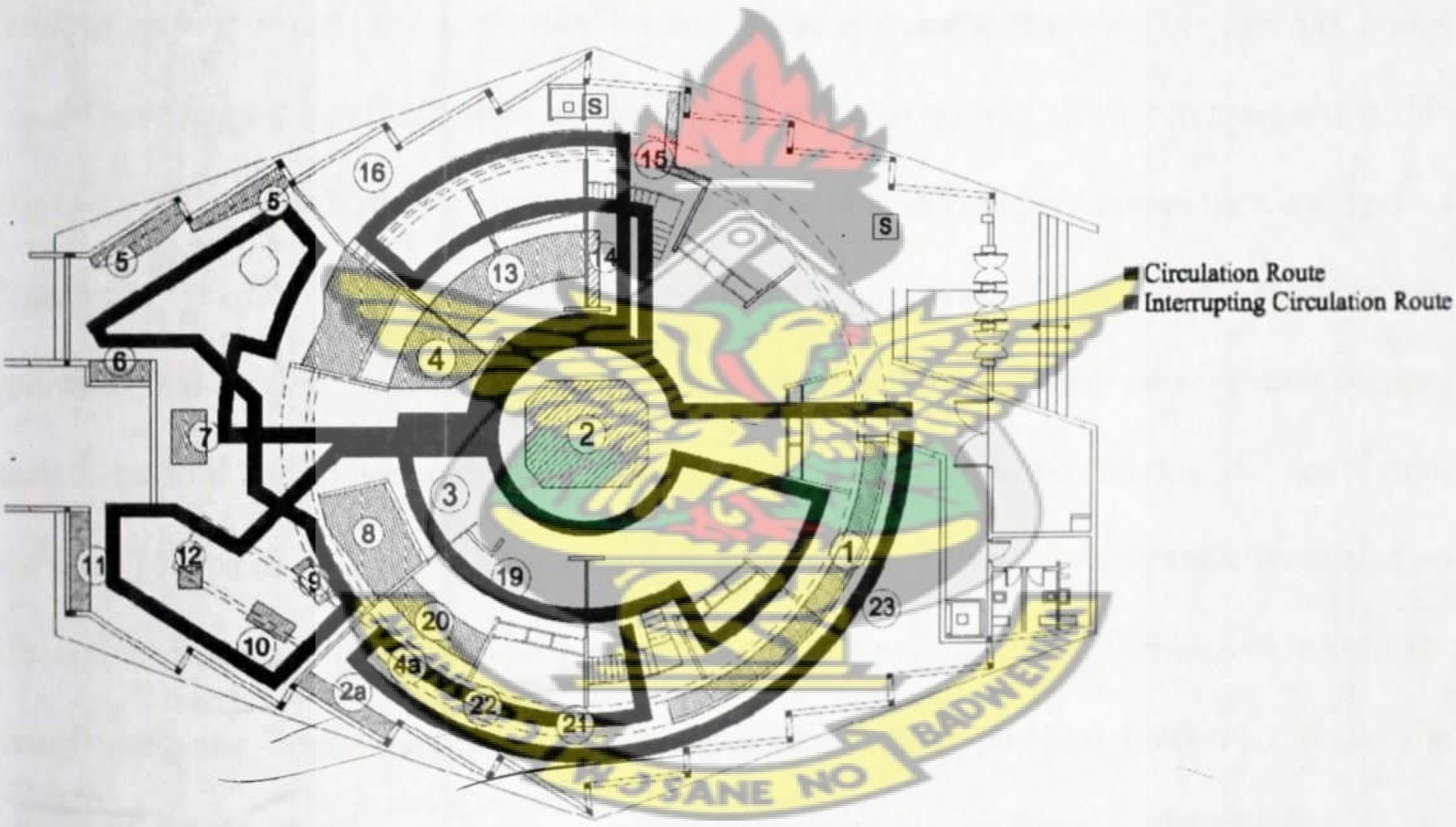

Figure 4.28 Typical circulation routes during self-exploration: ground floor (Permanent Exhibiiton)

Source: Author (field study)

The intersection points within the Black Odyssey event were numerous and varied, occurring almost evenly across the entire gallery space. A majority of these intersection points were social points and a high level of social interaction was observed as the resultant effect. Within the Renaissance event very little intersection was observed with a resulting low interaction.

Degree of Orientation: Two-thirds of adult visitors found it difficult to navigate the space unaided by any intended visible signage or physical markers. From the previous layout in Fig. 4.28 of independent movement at the Permanent exhibition, it is clear that most visitors decided to relate their movements with respect to the most central area, exhibit 2. Most adult visitors said they would have preferred to be able to control their movement in the gallery space by using maps or boldly written signage to select desired destinations within the gallery to explore. Most group visitors especially did not appreciate the lack of orientation because it made regrouping or reassembling difficult. Parents with children found it very difficult to cope with the lack of direction as well. One adult male visitor commented that it had been *'tedious getting around the exhibition'* because there was *'no way identifying exhibits, which would have helped especially with all the delays'*, and also no way of orienting oneself within the space. Over two-third of visitors interviewed said that they did not notice the slave section because it was not visually obvious nor were there any distinct navigational markers that indicated that section. In variation, most children also noticed the slave trade section because their behaviour and movements were more adventurous and carefree and they did not require the use of maps or other navigational tools. For the Black Odyssey event, there were also no directional maps for location. However, visitors were able to orient themselves within the space using the large, mounted signage and other distinct physical markers such as the comments board. There were no navigational markers within the Renaissance gallery.

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iv. VISITOR ACTIONS AND BEHAVIOUR

a. Permanent Exhibition

The most distinct behavioural differences were observed between group visitors and single visitors. All observed actions were recorded as shown in Table 5 and have been classified under group visitors and single visitors. Some actions such as 'observing' (artefacts) and

'reading' ran across all visitor types. Over 86% of all visitors said they were as interested in reading information and citations on the artefacts as in observing them. Most shared the same opinion that information on artefacts was limited in content.

ACTIONS	GROUP VISITORS	SINGLE VISITORS
MOTION	Walk (around exhibit)	Walk (around exhibit)
	Dance	
	Sit	Sit
	Lean	Lean
	Discipline	
	Separate (from group)	
	Join (group)	
	Roam	Roam
VERBAL	Explain	
	Talk	Talk
	Question	Question
	Answer	
	Discipline	
AUDITORY	Listen/Hear	Listen/Hear
VISUAL	Read	Read
	Observe	Observe
	Picture taking	Picture taking

Table 4.4 List of Observed Actions of Visitors
Source: Author (field study)

As shown in the table 4.4, while group visitors displayed more **verbal actions** such as conversing or explaining, questioning and answering, single/individual visitors displayed more **visual actions** such as observing, reading and roaming round the artefact. There was more boldness to touch and explore artefacts with group visitors than with single visitors who attempted tactile actions only after observing the actions of other visitors. Certain group types such as family groups also displayed disciplinary actions such as verbal warnings or pulling/leading children away from touching artefacts. Group visitors also displayed **motion actions** such as separation/breaking away from their groups to undertake self-explorations

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and would then later rejoin the group. Often, group members chose to either independently observe artefacts (much like single visitors) before rejoining the group or call other members of the group over for a collective examination of the artefact of interest. About four (4) out of every five (5) group visitors daily displayed actions of separation and rejoining. Children displayed the most active and animated actions such as roaming round artefacts, running, touching, laughing, singing and dancing within the first 30 minutes. In observing a group of two children, it was noted that **'mimicry'** was the behaviour most often displayed, specifically that of dance and speech. The behaviour was halted temporarily when they became conscious of adult visitors within the same space (see figure 4.29).

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Fig. 4.29 children imitating stationary statue
Source: Author (field study)

Fig. 4.30 single visitor observing artefacts
Source: Author (field study)

Single visitors were occasionally observed talking with other visitors mostly during periods when group members isolated themselves from their groups. Visitors' behaviour was pleasant and open when sharing a common space. After the 30th minute, both adults and children displayed actions of fatigue such as sitting or leaning. Most visitors felt uncomfortable portraying such actions within the gallery and left once they felt they tired or fatigued. One 27-year old male visitor interviewed said, *'I would have liked to sit for a while and still enjoy*

being in the museum, but I couldn't! I felt like I had to hide anytime I wanted to sit down a little.' Most believed that the museum rules prohibited actions such as sitting or leaning.

b. Black Odyssey and Renaissance Exhibitions

There were more 'group actions' observed within the Black Odyssey event than 'single actions'. Conversely, with the Renaissance exhibition, there were more 'single actions' than 'group actions'. Actions such as talking, touching, observing, listening (audio-visuals aids), picture-taking and roaming were amongst the most common with most visitors. For the Renaissance event, the only observed actions by both group and single visitors was observing exhibits whiles for group visitors it was breaking away and rejoining.

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c. Analysis

Within the Permanent exhibition, it was observed that the actions of each visitor type (single or group) were easily adopted by the opposite type. For example when single visitors came into contact with other visitors, they adopted more 'verbal actions' to engage their acquaintance. Also when group visitors isolated themselves from their group, 'visual actions' were more active than 'verbal actions'. However, these 'social role reversals' lasted no more than 10 minutes on average for each visitor, before they reverted back to their original states. Each felt uncomfortable with the adopted actions because of the lack of proper/appropriate avenues or spaces to express them. One single visitor said, *'The only time I ever approached anyone was when I wanted to ask for the location of a particular section, that was all! It didn't feel natural.'* A group member also said, *'Whenever I tried to find a little time and space away from my friends, they would easily find me or I'd hear them close by and just give up..'* 'Social role reversals' also occurred within the Black Odyssey event, however these often lasted longer than with the Permanent exhibitions. For example, single visitors who attended the event were quickly developed strong social interactions usually after the 20th minute,

either through meeting someone familiar or engaging in an interaction on exhibits with another visitor. On the other hand, group members that begun the tour together soon developed strong personal interactions with exhibits after the first 10 minutes. Typically, these interactions lasted 10 - 20 minutes with the tour ending 15 minutes later.

Fatigue was also a behaviour that run across all visitors. For the Permanent and Renaissance exhibitions, it was much more prevalent than in the Black Odyssey event. However, visitors did not feel comfortable with this behaviour (Permanent and Renaissance exhibitions) because there were no **'break spots'** - designated seating or lounging areas within the galleries. A few designated 'break spots' such as seating areas were present within the Black Odyssey event, this allowed visitors a period of **'recovery time'** to enable them continue with the tour. Visitors who did not experience any recovery time, soon left the gallery space.

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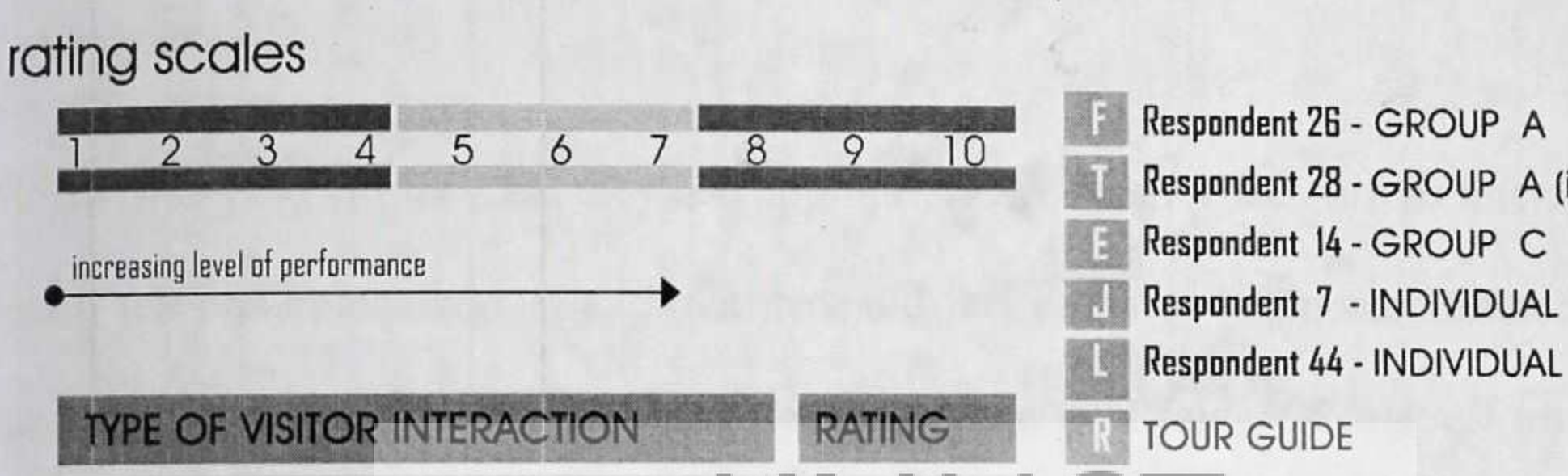
v. SOCIAL INTERACTIVITY AND COMMUNICATION

a. Permanent Exhibition

Table 4.5 rates the level of interaction amongst various types of visitors. Interaction was more commonly observed amongst individuals of the same group than with other visitor types. The latter interaction usually occurred when group members were isolated. When asked, 7 out of 10 single visitors said they felt more comfortable approaching or being approached by other visitors this way than to confront a large group. The kind of interaction observed usually comprised either long, deep personal conversation or short, polite inquiry on artefacts, depending on the nature of the visitors' relationship. When asked how she felt about interacting with others visitors within the gallery, respondent '27' replied that, *'it's not that easy unless maybe I already knew the other person... and there's something to talk about'*. Respondent '34' said, *'I can't just go and start talking to someone! I'm sure I'll be disturbing*

them.' The second most common interaction was observed between tour guides and visitors. This interaction was typically question and answer sessions which helped to provide visitors with more information on artefacts or the event itself.



TYPE OF VISITOR INTERACTION	RATING
F → T	9
F → R	8
T → R	7
T → J	7
J → R	7
F → E	7
J → T	6
L → T	4

Table 4.5 List of Observed Actions of Visitors
Source: Author (field study)

b. Black Odyssey and Renaissance Exhibitions

Social interaction was very present amongst visitors during the Black Odyssey event. Visitors engaged in active dialogue and had the opportunity to do so sitting down or standing up.

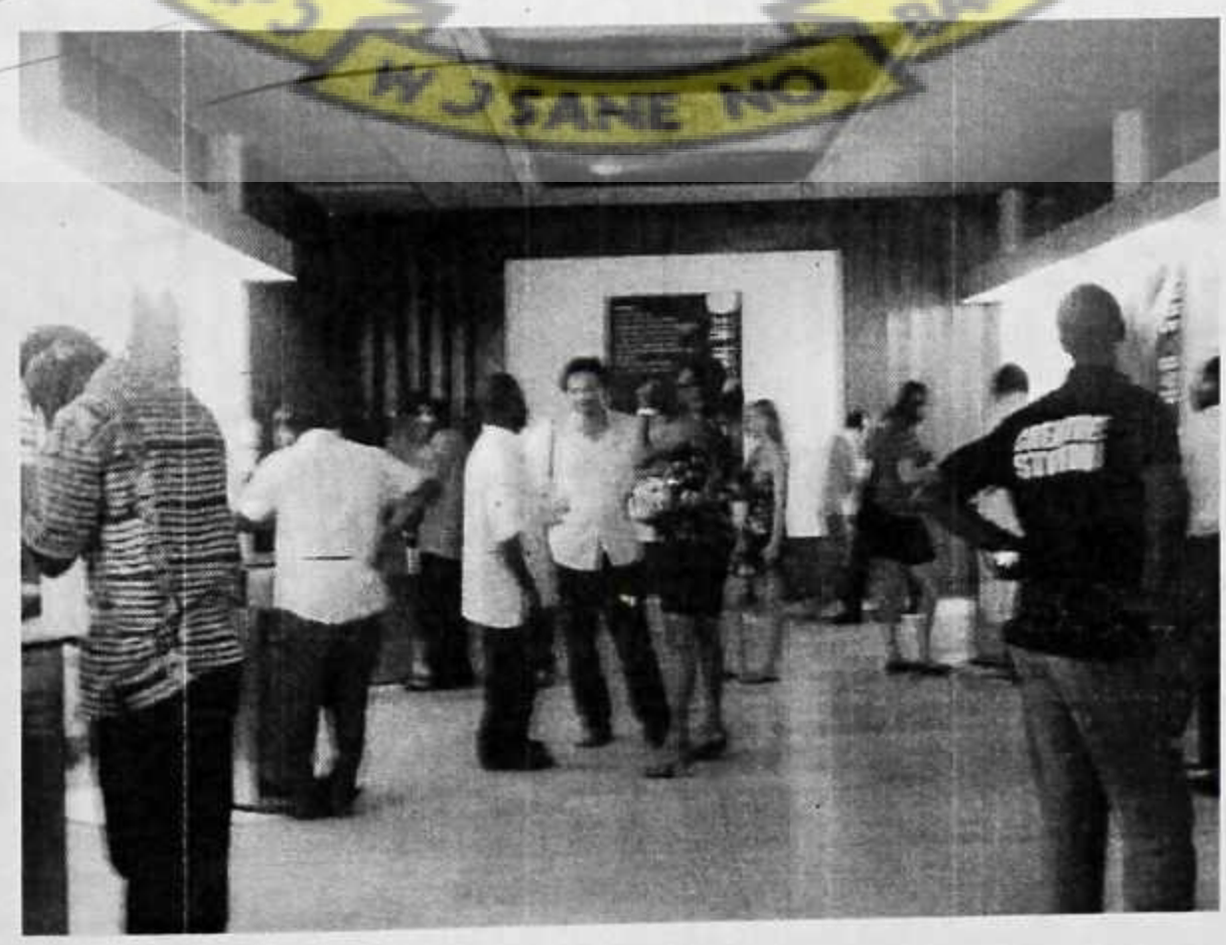


Figure 4.31 Visitors Interacting at Black Odyssey
Source: Author (field study)

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Visitors spent as much time engaged in conversation as they spent exploring the actual exhibition. Single visitors also mingled well with group visitors. For the Renaissance Exhibition, very little social interaction was observed amongst visitors.

c. Analysis

Most visitors did not feel that they had appropriate avenues for the various interactions. Most said it felt pretentious and agreed that it would feel easier to begin such interactions within spaces for designated interactive activities. Respondent 22 said, *'Of course I want to discuss what I've seen all day.. but where's the space for that?'*

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4.3.8 PART B: RESULTS FROM INTERVIEWS AND DOCUMENT ANALYSIS

Part B of the study mainly discusses findings on the aspect of physical interactions within the galleries. While some of these findings were obtained by observations, most were findings from interviews with respondents. The results were compared with and validated by various documents obtained on visitors' response to the various exhibitions. As with Part A, the results of the study for the Permanent Exhibition are presented alone while the results of the study for the Black Odyssey and Renaissance exhibit are presented together in a comparative study.

i. VISITOR RESPONSE TO AMBIENT ENVIRONMENT

a. Permanent Exhibition

Lighting: The gallery space of the permanent exhibition is permanently lit by natural daylight. Light floods the gallery space primarily from above (first floor) by means of full floor-to-ceiling louvered windows which run continuously round the external walls of the first floor gallery. Towards the rear end of the gallery are the presence of light wells on the roof slab of the ground floor. Light from these light wells illuminate that particular space, giving a feeling of significance to those spaces. Light also enters the gallery space from the windows created between the angled fins (which act as a sun-shading device on the east and west axes) as well as from the clerestory windows. There is also the addition of extensive artificial lighting (fluorescent lighting, spot lighting) within the space.

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Fig. 4.32 lighting of museum from above
Source: Author (field study)

Fig. 4.33 Light wells within gallery space
Source: Author (field study)

Most visitors remarked at the appeal of having such immense natural lighting within the space while expressing disapproval at the extensive presence of artificial lighting within the space which seemed to look random in placement. Some also expressed surprise that some spaces within the gallery were still very dark even with all the lighting within the space. There was no indication that artefacts had been arranged to respond to the availability of

natural lighting: artefacts which contained delicate material such as fabric or writing material were placed in direct contact with solar heat and radiation without much protection. There was also no indication that lighting had been arranged to place emphasis on certain interesting or valuable artefacts. In visitors' views, lighting also did not favour reading from information panels during later times in the day.

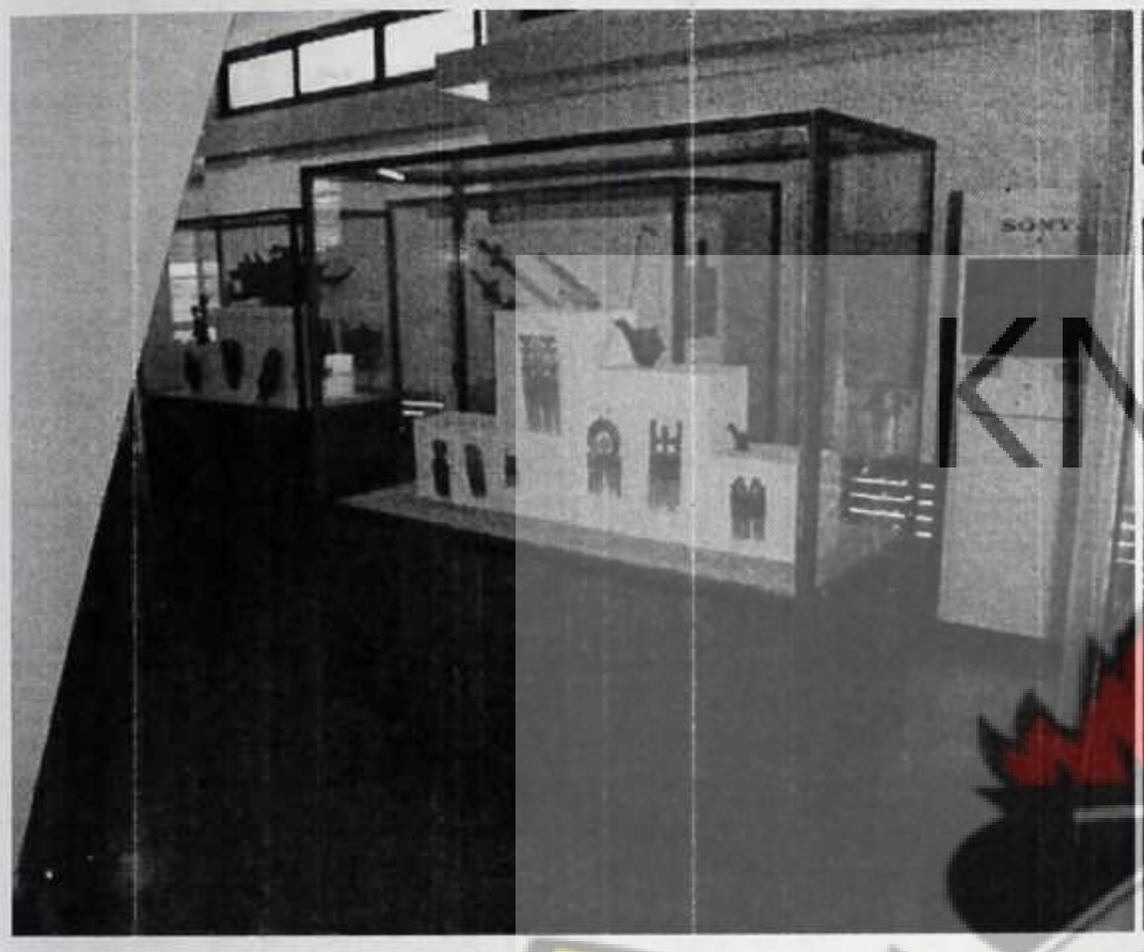

Fig. 4.34 dark sections of gallery space
Source: Author (field study)

Fig. 4.35 Artificial lighting (above) within gallery
Source: Author (field study)

Acoustics: Most visitors expressed surprise and disappointment at the fact that very little acoustical technology had been incorporated into the exhibition event. Artefact sections and spaces such as the dance sections, musical sections, etc could have been made more exciting with the use of appropriate sound technology. Some commented that it would have been nice to hear some appropriate music playing in the background. Others suggested that simulated audios or even loudspeaker systems could also be used to relate the tour guide experience for those who still wanted to explore the exhibition alone.

Audio-visual aids: There was no presence of any audio-visual technology. These could have been helpful for relaying information to visitors without the constant need for tour-guides and could also give more colourful and animated relay of those past events which featured the artefacts displayed.

Thermal Conditions: Heat gain and heat loss within the gallery were mostly by natural means. There is the presence of mechanical ventilation (overhead fans, standing fan and coolers) which seemingly serves to mediate the heat gained in the afternoon and keep the air within the space in circulation. However, some visitors complained at the impractical nature of the fans, which blow at everything. They also had issues with the standing fan units. Some suggested artificial air-conditioning systems to cool the place down while still maintaining some pleasantness within the space.

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ii. VISITOR RESPONSE TO GALLERY SPACE

a. Permanent Exhibition

The following observations were made whiles studying visitors:

- visitors were observed looking up at the dome structure of roof; most single visitors stood at a point and rotated full circle in either clockwise or anticlockwise motions to get a complete look; others like group visitors also pointed up at the roof structure to draw the attention of other group members; there were overheard exclamations by children and quiet murmurs made by adult visitors.
- visitors were observed initially roaming round the centralised space and generally looking at the space in its entirety before proceeding to a particular exhibit.
- most children visitors touched the walls and partitions of the exhibition space.
- visitors were seen looking up at the inner-lit beam of the gallery before some were observed going up to the first floor and looking down into the circular void.
- some visitors isolated themselves within quiet spaces of the gallery, while others found make-shift seats to sit on and watch exhibits.

b. Black Odyssey and Renaissance Exhibitions

For the two events, the gallery space acted as a backdrop for arrangement of the exhibition elements. The main focus of visitors' attention was on the exhibits and the arrangement of the exhibition.

When one visitor at the Black Odyssey event was interviewed about the gallery space, he replied, 'I don't know about the space but the exhibition was great!' His response seemed to suggest that there had been nothing about the actual space that had caught his attention save for the presence of the exhibits. Another visitor commented on the arrangement of the exhibits, 'the arrangement of everything was really nice.. I liked how orderly everything looked and I liked how the information was mounted up on the walls; it was readable..' Another visitor response, 'the space wasn't really that big, but it didn't seem that way! We all sort of fit and had a good time!' In this case, the functionality of the space and its ability to accommodate the exhibition was what made an impression on visitors as against the aesthetics of the space. The space managed to be transformed by the spatial organisation of the exhibition.

For the Renaissance exhibition, the space did not create much of an impact on visitors. Most visitors agreed that the artworks themselves were interesting but did not feel that there had been anything special about their arrangement. This impression run through for most visitors, especially since the sale of each artefact left the space even barer than before.

iii. VISITOR RESPONSE TO EXHIBITS

a. Permanent Exhibition

A labelled overview of all exhibits for the ethnographic and archaeological sections of the permanent exhibition has been previously provided in section 2.4. A descriptive overview of

exhibit units is provided below, following the recorded observations and responses from visitors.

Textiles Section

Overview: Samples of traditional fabric which were mounted up on erected display panels; larger and more durable textile pieces were left uncased while the more delicate fabrics were framed and cased in glass for protection. This section also featured a working loom displayed within the open space. Visitors were observed spending time at each of the panels; most visitors flipped through the smaller textile display before moving on to the larger fabrics. Each visitor seemed curious about the loom and studied it from all sides. A few hesitated before touching parts of the loom. Group visitors stopped to discuss their various impressions of the loom and a few gave imitations of a typical weaver working on the loom.

Fig. 4.36 Exhibits displayed within textiles section
Source: Author (field study)

Fig. 4.37 The loom exhibit
Source: Author (field study)

Strengths: Of the 18 visitors observed, 15 had been most impressed by the loom and took time to read about it and ask questions about it (for those in the structured tour). As one visitor said, 'I have never actually seen a loom before.. it's nice to see how it all comes together.' All 18 visitors gave in to the urge to touch the artefacts, even those that were

framed. They admired the quality of the textiles and the chronological arrangement of the various pieces.

Weaknesses: Most of the visitors had not been able to understand how the loom functioned. Only 4 out of 21 visitors claimed to have any knowledge about the working of the loom. Most visitors said they had hoped to see actual images or footage of loom weavers at work. 'It would have been nice to appreciate the way it actually works. I still have no idea how they manage to make a whole fabric from this.' The extent of physical interaction with the loom (touching) did not seem to satisfy most visitors' curiosity about it. One group of visitors said, 'Wouldn't have minded actually trying it out, but that's not permitted right?'

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Stools Section

Overview: A selection of 12 stools were placed on a short podium at 3 levels. Visitors spent a lot of time at this section, reading the names and functions of the various stools. Some asked if they could touch the stools and were disappointed when they could not. A few visitors chose to sit down on the edge of the podium and study the stools further. Visitors within the structured tour spent more time at this section than other visitors; they asked questions and probed the tour guide for more detailed information on the stools.

Fig. 4.38 Stools displayed within centre of space
Source: Author (field study)

Fig. 4.39 Stool exhibits at rear end of gallery
Source: Author (field study)

Strengths: Visitors were really attracted to the display of the different types of stools. As one visitor said, 'I didn't know that there were this many stools and all for different things! This is really interesting. Makes me want to get one of those domestic ones to take home!' There was a lot of appreciation also for the value of the stools. 'The craftsmanship is amazing.. I could have been there for hours..'

Weaknesses: While most visitors appreciated the value of the artefacts, they also did not feel that the arrangement of the stools did them any justice. 'I thought the stools in the front were the only ones in the museum, then I went to the back and saw more of them.. I didn't get why they had been separated; the ones at the back look like they had been discarded.' Some adult visitors had felt there could have been more information displayed. 'I was really just spending a lot of time there because there's something interesting about the way the symbols had been carved into the stools.. seems like there was a lot of meaning to it, but I couldn't see all sides of the stools.' 'Would have wanted to see how it felt like to sit on some of them.'

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Regalia Section (Northern Region)

Overview: Artefacts were hung up on display boards; traditional seating and rug were mounted on a raised platform. A mannequin was displayed of a man dressed in traditional regalia and sitting on a horse. Visitors only moved around the periphery of this section and simply observed from a distance. Some managed to go further into the section and read the information on the display boards. Visitors did not spend much time at this section;

Strengths: Visitors liked the uniqueness of the artefacts and the materials that formed them. 'Really interesting to see that items like these existed so long ago.'

Weaknesses: Visitors found it difficult getting round to examine the artefacts. Many did not spend a lot of time with the artefacts or read the information mounted.

Musical Instruments

Overview: A number of musical instruments mostly percussion and wind instruments were displayed on an open raised platform. Smaller instruments were hung from display boards that bordered and defined that section.

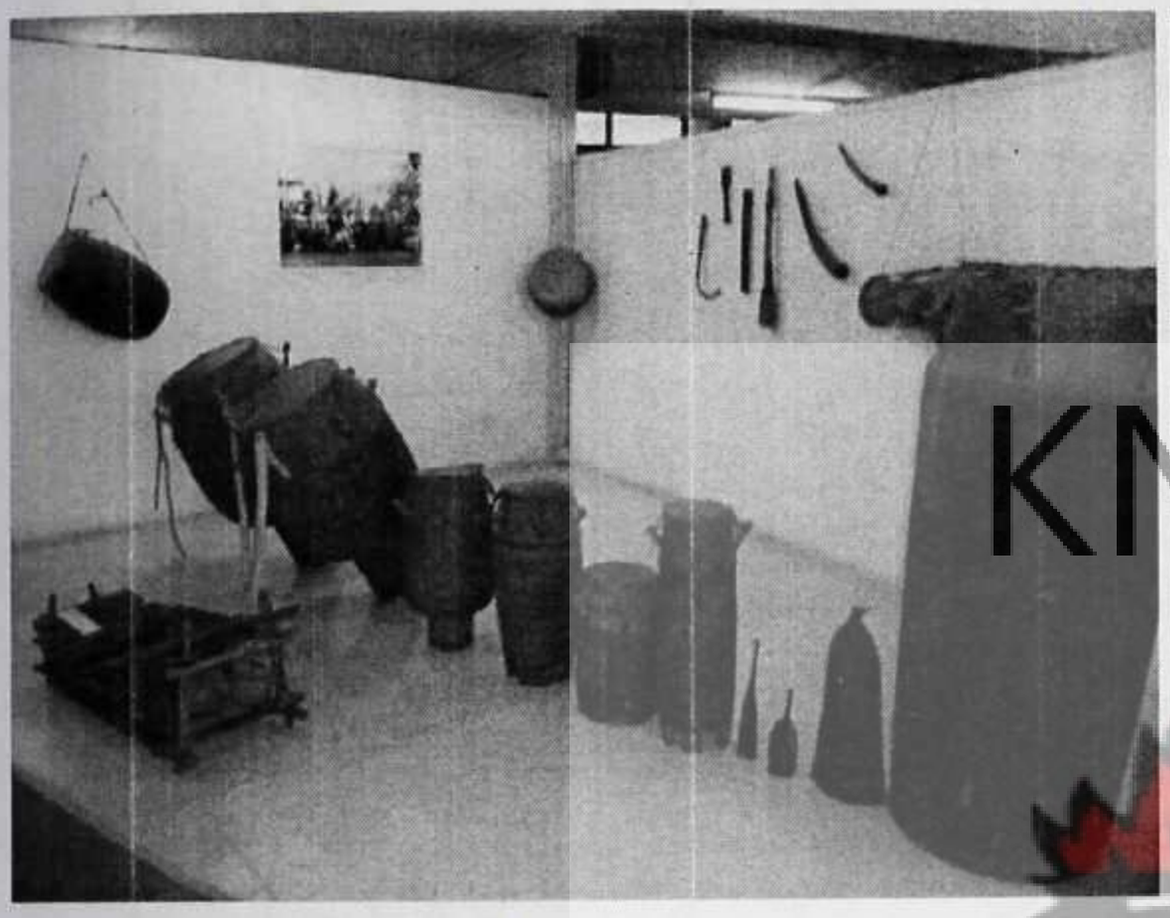

Fig. 4.40 Music exhibits displayed on platform
Source: Author (field study)

Fig. 4.41 Music exhibits hung on display walls
Source: Author (field study)

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Strengths: Most visitors were captivated by the various musical pieces displayed. 'Some of the pieces are so peculiar.. I wouldn't have imagined playing anything like this in those days.' A lot of visitors engaged in discussions on the instruments whiles standing and observing the artefacts. A few were bold enough to sit down on the platform beside the artefacts. Other went further and took a chance at touching the instruments especially the xylophone instruments. There were a lot of animated movements by children including actions that mimicked certain kinds of musical play.

Weakness: Many visitors felt that the information on the instruments was very scanty and poorly displayed. Many could not read the text because it was so far back. Most also felt that the musical section could have incorporated actual sound technology into the exhibition that depicted the kind of sound each instrument made. 'There should have been some music playing in the background', said one mother. 'my children kept asking me how the xylophone

sounds like and I could only try to make certain sounds I thought were similar; they are only imagining what these instruments sound like and that's not enough.' One child said, 'I wanted to play on one of the drums but my teacher said I shouldn't touch anything'. Most also did not understand why there had been separate sections on musical instruments. 'Don't understand why they did that.. it's not as if there wasn't space for them.. would have really liked to see the two xylophones side by side just to see the difference.

Traditional Dance Section

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Overview: This section was composed mainly of mannequins in various acts of traditional dance motions such as the ga's kpanlogo and the ashanti's adowa; in the middle of the space stood a mannequin of an Asafo flag-bearer. Information on the various dance movements were mounted on the display boards. In total, over two-thirds of all visitors observed were seen more at this section than any other section. Most of the visitors to this section included children. Visitors were observed engaged in discussions and conversations more freely here; they also felt more at ease sitting down or physically engaging with artefact.

Fig. 4.42 Mannequin exhibits within dance section
Source: Author (field study)

Fig. 4.43 Mounted images of traditional dances
Source: Author (field study)

Strengths: Visitors remarked that they had felt at ease within this space. One father in a family group explained, 'It's probably because I didn't need to wonder where the children were anymore! They loved playing in the dance section. I'd turn round to see my son dancing abgadza and my other two daughter laughing their heads off. They really loved it.' Another visitor said, "It was nice because it gave me a chance to freshen up on my knowledge of Ghanaian dance moves.'

Weaknesses: Most foreign visitors could not easily relate the stationary motions of the mannequins to actual traditional dances. One foreign female visitor said, 'I really do not know what or how those dances are like; would really have liked to see a video or something that showed the real moves.' 'I'd heard a lot about Ghanaian dances and all that but having been here thought I'd see the real thing in action.. too bad.' Visitors felt that the dance section was poorly lacking in audio-visual content. As the previous visitor commented, *'It was nice because it gave me a chance to freshen up on my knowledge of Ghanaian dance moves..'* and later on added, 'but I would have loved to see some videos as well that actually show us the moves..!'

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Historical Section (Slave Trade History)

Overview: This section denoted the end of the structured tour. Display stands were set up which encased information on historical sequence of slave trade events. The narrative moved visitors from the beginnings of the European trade era to the proliferation of religion and the beginnings of actual slave trade. Visitors end their tour in an enclosed room, which they access through a small arched door. The space contains a display of a slave ship leaving the coast of the then Gold Coast for Europe; the display is set against a back drop of a painting of a slave ship at sea. Visitors spent a lot of time reading the information from the display

panels; they also spent a lot of time in the last space, touching the ship models and running their fingers through the sand material.

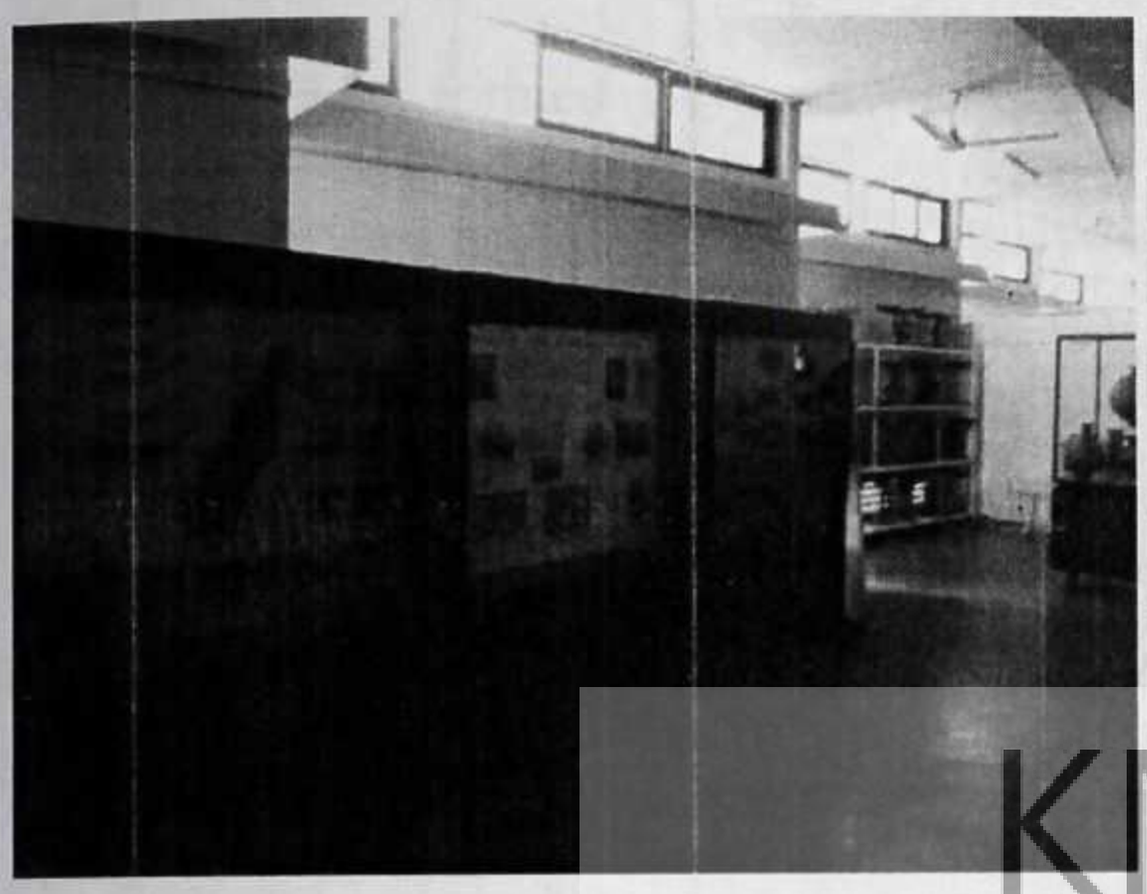

Fig. 4.44 Display cases on history section
Source: Author (field study)

Fig. 4.45 Exhibited model of slave ship
Source: Author (field study)

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Strengths: Visitors felt there was a lot of information on the slave trade era.

Weaknesses: Although it was evident that there was information on the slave history, most visitors were disappointed at the arrangement of the exhibit. Visitors felt that the exhibition should have been given more importance and value by way of the arrangement and attention to detail of the exhibits. "It's as though they've just thrown them to the back." 'Was really looking forward to seeing a lot more on that part of African history, too bad.. should have been a big part of the exhibition.' 'I didn't feel anything at all.. I only read the stuff on the boards.. would really have liked to feel what it was like back then.' 'It's just about the models and the info.. even the pictures aren't saying much. They should have been much larger!' 'Don't think that section does justice to such an important time in our history.'

b. Black Odyssey Exhibition

Responses on exhibits were favourable. Respondent 56 said, 'I really loved being able to read the information on all the great musical legends and I got to listen to some good tunes!'.

iv. PERSONAL TRANSLATION AND DERIVED MEANING

a. Permanent Exhibition

62% of visitors formed a vague picture of the entire exhibition. Visitors who toured independently had been more confused than visitors who opted for the tour guide experience. 'I really did not know where I was going much.. and the information was so small it did not help either.' 'It was nice but I don't know if anything really stood out for me.. some of the pieces were nice but nothing about them really stood out for me and they didn't have sufficient info on them..' 27% said the exhibition had not left much of an impression on them. 45% had been left with a feeling of wanting more from the exhibition. 67% of the visitors remembered the artefacts but could not describe the space that they had been in. 58% of visitors claimed that they had not been satisfied with the time they spent observing artefacts. 75% had not felt that the exhibition would leave a lasting impression. When asked if it triggered any memories for them, 48% of visitors replied that it had (most of these were older respondents). When asked if the event was memorable, 70% of respondents answered 'no' (of these, a majority were local visitors). When visitors were asked how they preserved their memories of the experience, 27% of respondents claimed to have taken photographs, 5% bought books as souvenirs from the reception point. The rest of the respondents had nothing tangible to preserve the memory of their experience.

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v. ACHEIVEMENT OF GOALS AND EXPECTATIONS

Chidren: Most children had felt free enough to play within the space. School children who had been accompanied by teachers did not feel that the space had been exciting enough. 'They said we shouldn't touch anything.' 'I couldn't hear what the teacher was saying.' 'I wanted to dance!'

Adult Visitors (Group): Most adult visitors did not feel that there had been a lot to do as a group together. 56% of interviewed visitors felt that the tour had not been what they were expecting. When interviewed, one male visitor who had come with his lady friend said, 'I had thought coming here would give us some time together to do something different and fun.' One visitor said, 'I came with my grandfather.. when the tour guide was talking he really had a lot to contribute but there wasn't any avenue for him to really talk.. it was loud and nobody would even hear him..'

Adult Visitors (Single): 67% of single visitors had not felt the exhibition had met their expectations. 'I came to have some quiet time.' 'I came to meet up with people and learn something new'

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vi. SUMMARY OF STUDY

- A variety of visitors were observed visiting the museum; group and single visitors were the largest majority.
- The kinds of interactions observed were social (personal/public) and spatial.
- The exhibition sections that elicited the most response were the music and dance section, the ashanti section, the traditional house section and the boat scene, the historical slave section.
- Most text were too small to allow multi-access to information. so it was almost in a sense, 'one-at-a -ime' to read. Private groups especially did not feel comfortable sharing reading spaces with others and would move away or wait till others were finished.
- Most of the activity was from schools and children groups.
- The experience of the exhibition space was such that most people admired the artefacts but saw that they had no real presence or focus about them.
- There could have been more space for each activity purpose.

Strengths: Artefacts were interesting for visitors and had authenticity and cultural value; suggestion box and log book allowed visitors to express their concerns.

Weaknesses: Most artefacts had no real focus; entire exhibition did not integrate enough for visitors (arrangement); space seemed to lack any defined use for visitors (too vague, mostly all about placement of artefacts); no real seating places or rest points; no discussion areas; no activity areas for children or any involving activity for visitors; space seemed dull and seemed to lack any vibrancy; circulation was inhibited because some of the spaces were squeezed in; text were generally small and did not allow multi-participation.

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Expectations: need for music; need for videos; need for seating spaces (for both children and adults); need for orientation; need for feeling and value to be transferred to visitors. need for social discourse; need to participate in some activity together to validate time spent together (meaning activity that can involve group participation - especially for families)

The exhibition where respondents derived the least interaction was the Renaissance exhibition. Due to the commercial nature of the event, social interactions among visitors was limited. This resulted in a poor quality of visitor experience. 93% of respondents said their expectations had not been met.

Within the Permanent exhibition, only 28% of respondents claimed to have gained a good experience. Respondents were satisfied with the value of exhibits but were disappointed at the arrangement of exhibits, information provided and general lack of varied interaction. Generally the event lacked the needed interactions to satisfy visitors' expectations.

The exhibition where respondents derived the most social interaction was the Black Music Odyssey event. 95% of respondents said they had gained a full experience from the exhibition and that their expectations had been realised.

4.4 DISCUSSION OF SOCIO-SPATIAL DESIGN MODEL AND STRATEGIES

This section is a focus on the development of a design model to function as a framework and guide in the creation of a 'socio-spatial' museum (the Museum of Arts and Culture). This model builds on existing socio-spatial concepts that have been previously conceived to function mainly on the larger scale of the urban fabric. The following discussion is an analysis of selected museum case studies and highlights key areas within each study that contain characteristics of socio-spatiality. The purpose of such a comparative study is not simply to highlight the presence of those design aspects, but more importantly to demonstrate how the success of those museum spaces is influenced by the use of such socio-spatial features.

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4.4.1 DISCUSSION OF SELECTED CASE STUDIES

a. The Museum of Modern Arts, New York

The Museum of Modern Art in New York City (MoMA), has used architecture extensively to regenerate itself and redefine its identity (Psarra et al, 2007). The museum, established in 1929, has undergone seven successive expansions:

- The first building, by Woodwin and Stone (1939), was changed in the 50s and 60s through a series of projects by Philip Johnson, including the Abby Aldrich Rockefeller sculpture garden (Psarra et al, 2007).
- Cesar Peli (1984) erected the Garden Wing and a residential tower with six of the museum's floors extending beneath it (Psarra et al, 2007).
- Taniguchi's scheme (2004) marked the seventy-fifth anniversary of the Museum integrating all the existing structures into a unified accommodation. It comprises a new gallery section under a ten-floor tower, the renovated buildings, the new

Education Building, and seven floors in Cesar Peli's tower. It houses 'Contemporary Art' on the second floor, 'Architecture and Design', on the third floor, 'Painting and Sculpture' on the fourth and fifth floors, and special exhibitions at the top level (Psarra et al, 2007).

Psarra et al (2007) argue that in achieving this new identity, the redesign focused on the enhancement of the social character of the museum through a multilayered arrangement of exhibition and a redefined circulation network:

"On the fifth floor the visitors encounter multiple visual relationships among paintings and art movements. On the fourth floor they experience more private conditions of viewing implying more individual conditions of artistic development. These spatial differences correspond to the differences in the social character of the visit and the patterns of navigation." (Psarra et al, 2007)

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i. Spatial Configuration of MOMA (Taniguchi)

For main access of urban flow into the museum, two entrances open the museum towards the city. A garden space was created as the central element, and Taniguchi re-orientated the complex toward the new axis of growth along the east-west direction. The various spaces of the museum are integrated into a whole, through a top-lit atrium. Circulation is organised at a large scale using the junction between the tower, the garden and the atrium. Its redesign (from the single straight route, which reflected the exhibition's narrative) into a network of multi-layered movement is the main highlight of the redevelopment. The galleries as such are made more porous and multi-accessible. The original 'Bauhaus' staircase is restored and functions as an integral connection between the galleries (Robinson, 2004).

A strong diagonal accent links the atrium, the galleries and the garden. The centrality of the spatial configuration created allows the atrium and its relationship to the outside to be felt from the interior. This is in contrast to critical historicism of Le Corbusier and Mies who challenged centrality emphasizing an experience based on movement (Psarra et al, 2007).

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Fig. 4.46: Layouts of the MOMA (a) ground floor, (b) second floor, (c) fourth floor, (d) fifth floor, (e) fifth floor - with atrium, (f) fourth floor - with atrium

Source: Psarra et. al (2007) Tracing the Modern

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ii. The Visitors' Response to Circulation

Circulation around the galleries: Taniguchi's redesign was a response to the design brief which stated that it was essential that the sequence of spaces from the entry throughout the Museum should be seen as a powerful metaphor for the unfolding narrative of the Museum, directly supporting the curatorial message developed in the galleries (Riley, 1998).[1] Psarra et. al state that the new architecture implies that the rich field of visual relationships and social co-presence in the interior is an extension of the probablistic field of social encounter found in the exterior and in the city as a whole (Psarra et al, 2007). In other words the network of circulation systems created within the museum is similar to the urban interconnections of the city that are found on a larger scale. There is a sense of harmony in this such that visitors are familiar with the systems of movement and are made to feel comfortable and confident moving around. Familiar markers such as vistas (the garden), signage (navigational points/tools), urban views (made possible by the atrium's visual link to the exterior) create a sense of an urban place that visitors are accustomed with (see figure 4.48). The museum as such functions as a microcosm of the urban environment.

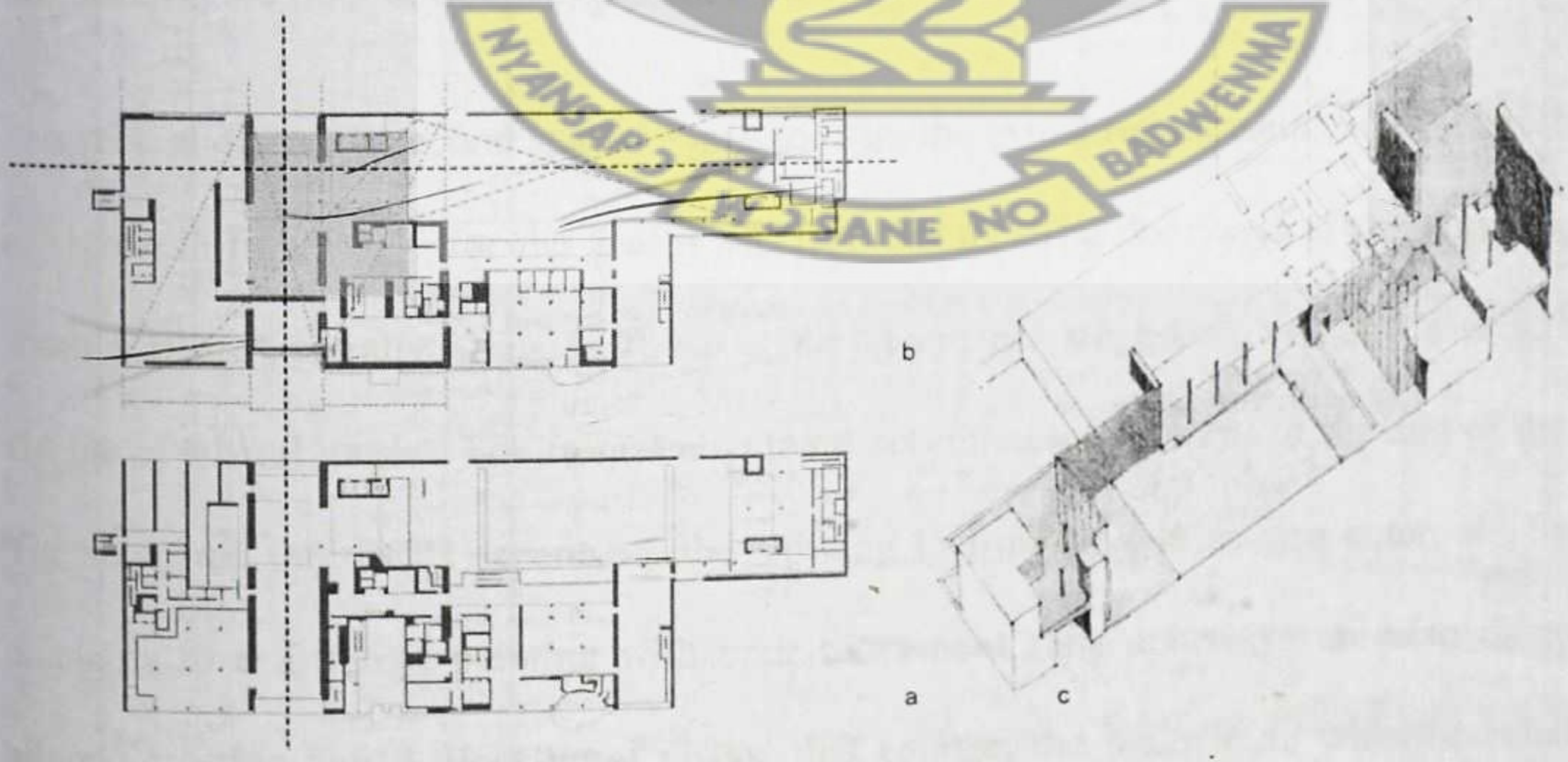

Fig. 4.47: Layouts and axonometric view of MOMA showing the spatial relationships between galleries and circulatory axes (a) ground floor (b) first floor (c) axonometric view
Source: Psarra et. al (2007) Tracing the Modern

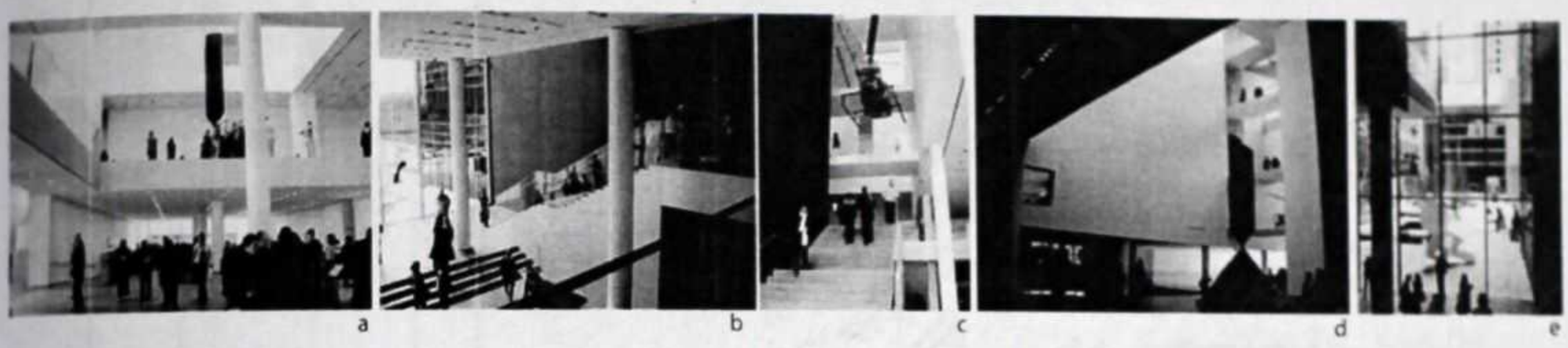

Fig. 4.48: Views within the MOMA depicting the urban nature of the space (a) atrium creates a public foyer, (b & c) circulation systems, (d) public scale of exhibition space, (e) grand views of the city

Source: Psarra et. al (2007) Tracing the Modern

Circulation within the galleries (Painting and Sculpture): Psarra et. al observe that there is no prescribed way to move in the galleries, but the rooms are interconnected allowing many plausible pathways to explore the collections. In addition, there are two entrances on each floor, while halfway along the course is a stairway, so that one can step out of the path and access the other level. However, to complete the visit in a forward direction, the visitors have to pass through the rooms linked in a sequence around the atrium (Psarra et al, 2007). This character of multi-accessibility suggests that visitors are allowed to create their own narrative of the exhibition which allows for a wide range of social interpretations and personal meaning to be created. The visitors' spatial interaction in this case has a significant amount of influence on the final museum experience.

Psarra et. al discuss a second spatial characteristic: the visual relationships among thresholds, as shown in figure 4.49 for the fourth and fifth floors. "The doorways at the north and the south part are centrally aligned. Those at the centre are staggered, creating a progressive change of '**visual angle**'. The frontal alignment accentuates the works at the end of the axis. The staggered thresholds accentuate the painting in front of you as you enter, shifting the emphasis to a different painting with your movement. The doorways are also diagonally aligned creating '**multi-directional vistas**' that connect the main route with the subsidiary galleries. Unlike the axial and staggered thresholds creating formality, the diagonal links encourage unexpected visual relationships and new comparative readings." (Psarra et al,

2007). Due to such visual linkage, visitors' interests are stirred and curiosity is heightened even before close contact is made with painting exhibit. This enhances the visitors' overall response to the exhibition.

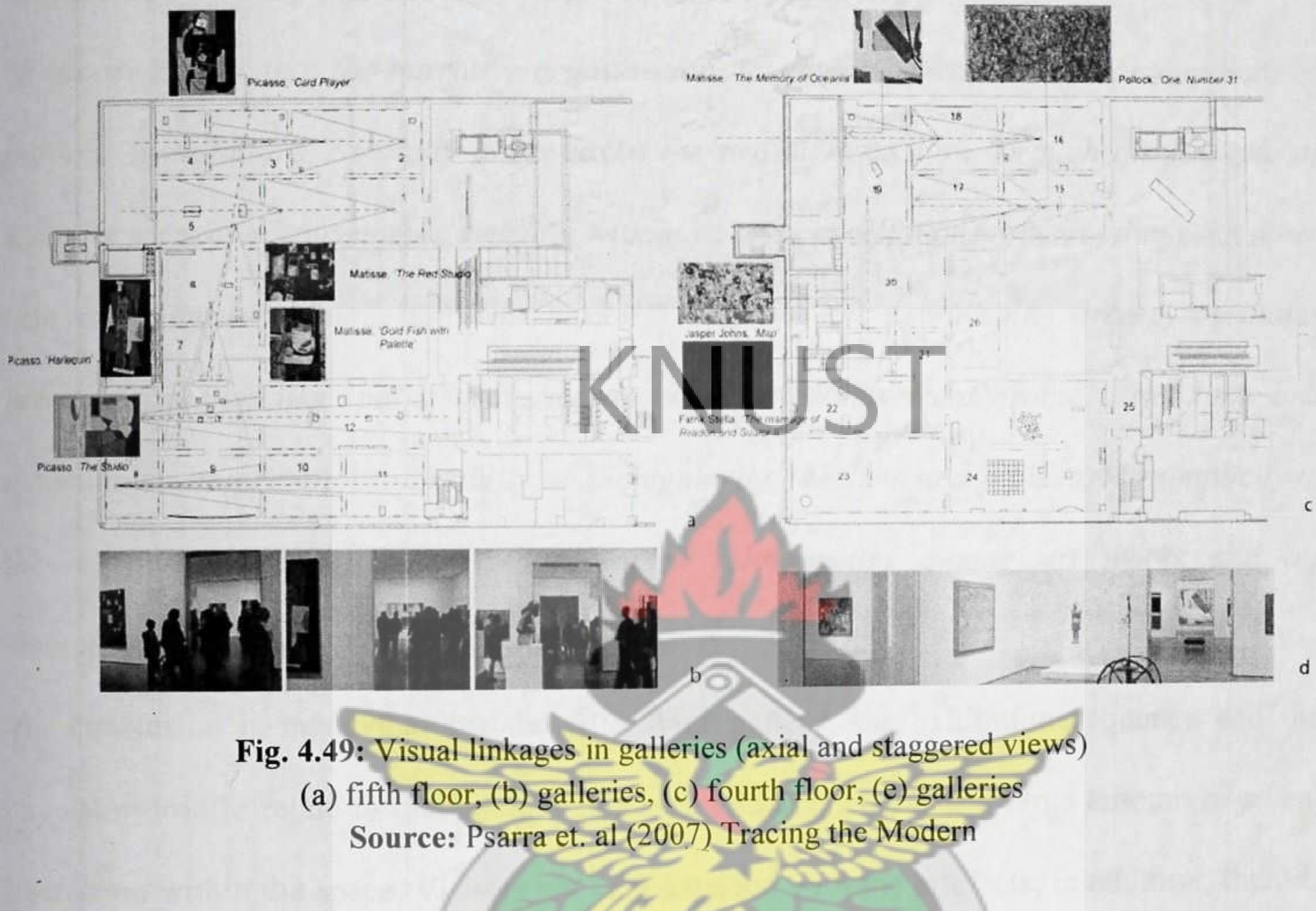

Fig. 4.49: Visual linkages in galleries (axial and staggered views)
(a) fifth floor, (b) galleries, (c) fourth floor, (e) galleries
Source: Psarra et. al (2007) Tracing the Modern

iii. The Visitors' Response to Arrangement of Exhibits

Within both fourth and fifth floor it is observed that the arrangement of paintings and artworks have been structured to resonate with the circulation network and visual accesses.

On the fifth floor the arrangement of the exhibits create two intersecting courses as depicted on the fifth floor plan of figure 4.50. These are the principal lines of the narrative, which provide a synoptic overview of the exhibition's theme (modern art); these main lines also allow for a number of deviations from their course into deeper aspects of the exhibits. These lines are also manipulated in a way as to give meaning to the central focus of the particular exhibition. Artworks of Matisse, for example are placed such that they are central to both

routes/lines; structured in this manner, the implication is drawn as to the central role of Matisse in the development of art, suggesting that he might feature in exhibits on both lines (Psarra et al, 2007). The incorporation of both axial and staggered views to the arrangement of exhibition creates a sense of discovery. Psarra et.al comment:

"It becomes clear that the narrative organization has departed from the linear sequence of previous installations. Spatially interweaved the two currents flow through the enfilade of rooms in serpentine movements, twisting with gaps and cancellations, interrupting each other then assuming their course until the next intermission. The new display strategy oscillates between opposites like spatial sequence and circuits of movement, frontal axial links and diagonal viewing positions, formality and irregularity, idealism and realism, the simplicity of the two-part classification and the complex relationships among art works and art movements." (Psarra et al, 2007)

The conclusion is made that for the fifth floor gallery, the exhibition sequence and the circulatory routes relate to one another in a way which encourages a large amount of social interaction within the space. Visitors are kept engaged with the artefacts; in addition, there is greater social interaction as conversations are stimulated as a result of individual interests.

On the fourth floor, the arrangement of the exhibition creates a network of parallels and oppositions (Psarra et al, 2007). This linear path allows for greater isolation of visitors, which seemingly enhancing the viewing conditions essential to appreciating the exhibits (see figure 4.50 b). The artworks are displayed on large and seemingly boundless canvasses. As such, the organisation here allows the visitor to be engulfed by the exhibition - the visitor's visual senses are submerged and he/her attention is focused solely on the exhibit. In this regard, there is a higher level of private/solitary appropriation of space displayed here; however, it is noted that the visitor's response and attention to the artefacts are still high, and meaning is still achieved during this solitary period.

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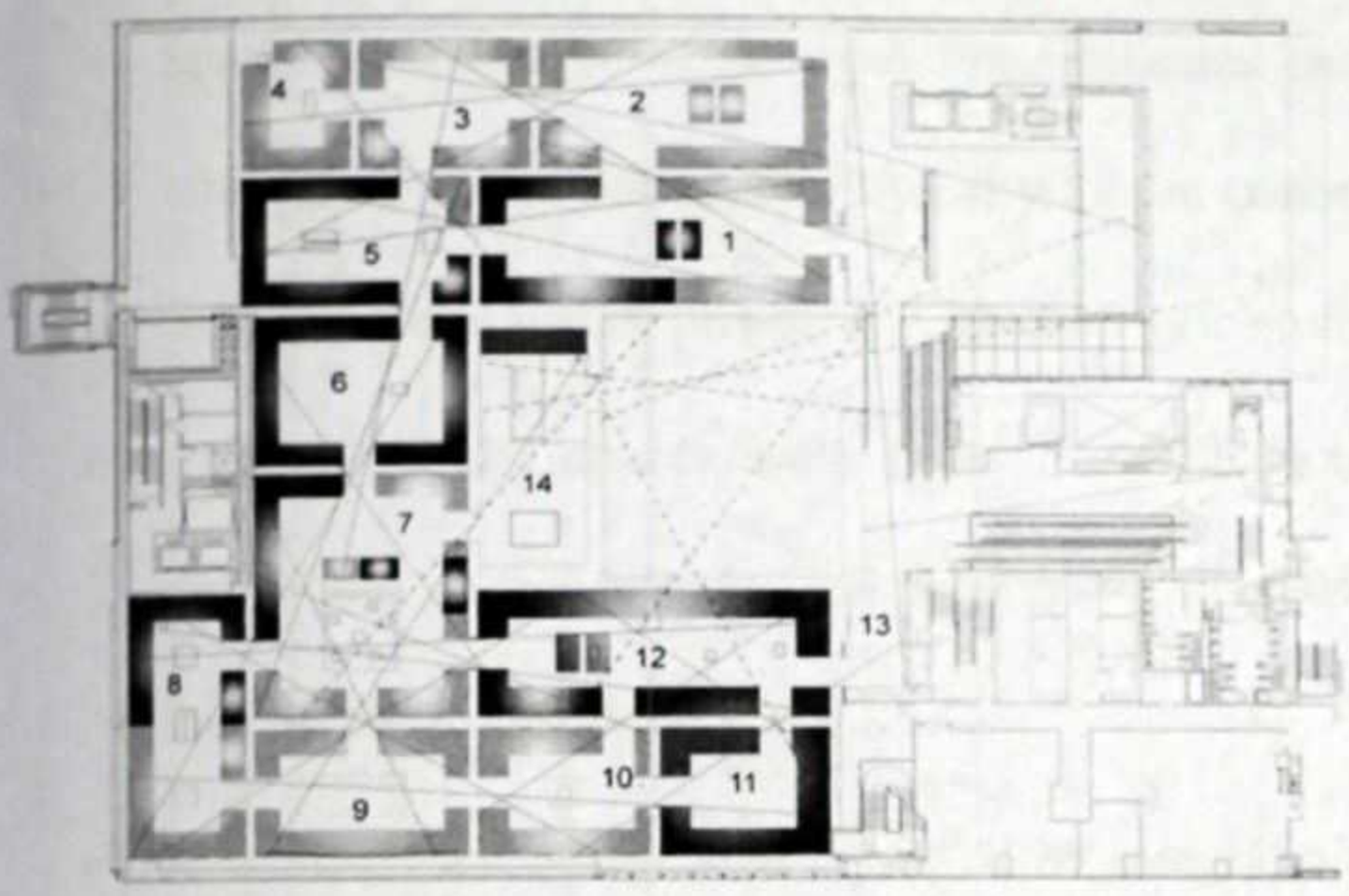

Fig. 4.50: Organisation of exhibition within Painting and Sculpture Galleries (Oct 2005)
(a) fifth floor - Modern Art, (b) fourth floor - Modern Art
Source: Psarra et. al (2007) Tracing the Modern

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iv. Conclusions on Socio-Spatiality in MOMA

- Within the museum, the design of circulation routes and spatial integration were based on typical features of the urban structure; this was used extensively to promote high social interaction amongst visitors.
- The spatial arrangement of the exhibition and the galleries as well as the structure of the exhibition circulatory routes translated the meaning of the exhibition's intent.

- Spatial arrangement of the fifth floor galleries encourages a multi-layered, visually integrated social visit (public space) while in contrast, the display on the fourth floor created a more linear, private and idiosyncratic environment. (private spaces)
- Although social spaces were present within each gallery, the integration of both public and private spaces was more achievable within the gallery on the fifth floor than on the fourth floor.
- A socio-spatial design was achieved by integrating patterns of urban movement into an exhibition arranged to relate this movement as well as the museum's narrative.

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b. The Guggenheim Museum, New York City

The Solomon R. Guggenheim Museum in New York City is strategically located on a key site at the south-east corner of eighty-ninth street and Fifth Avenue overlooking Central Park. The triumph of the museum is in its circulation system which Wright managed to design such that the morphology of the internal circulation system is reflected on the museum's public exterior. It is significant to note that this first visual interaction, even from beyond the museum's internal gallery space, manages to capture the visitor's interest.

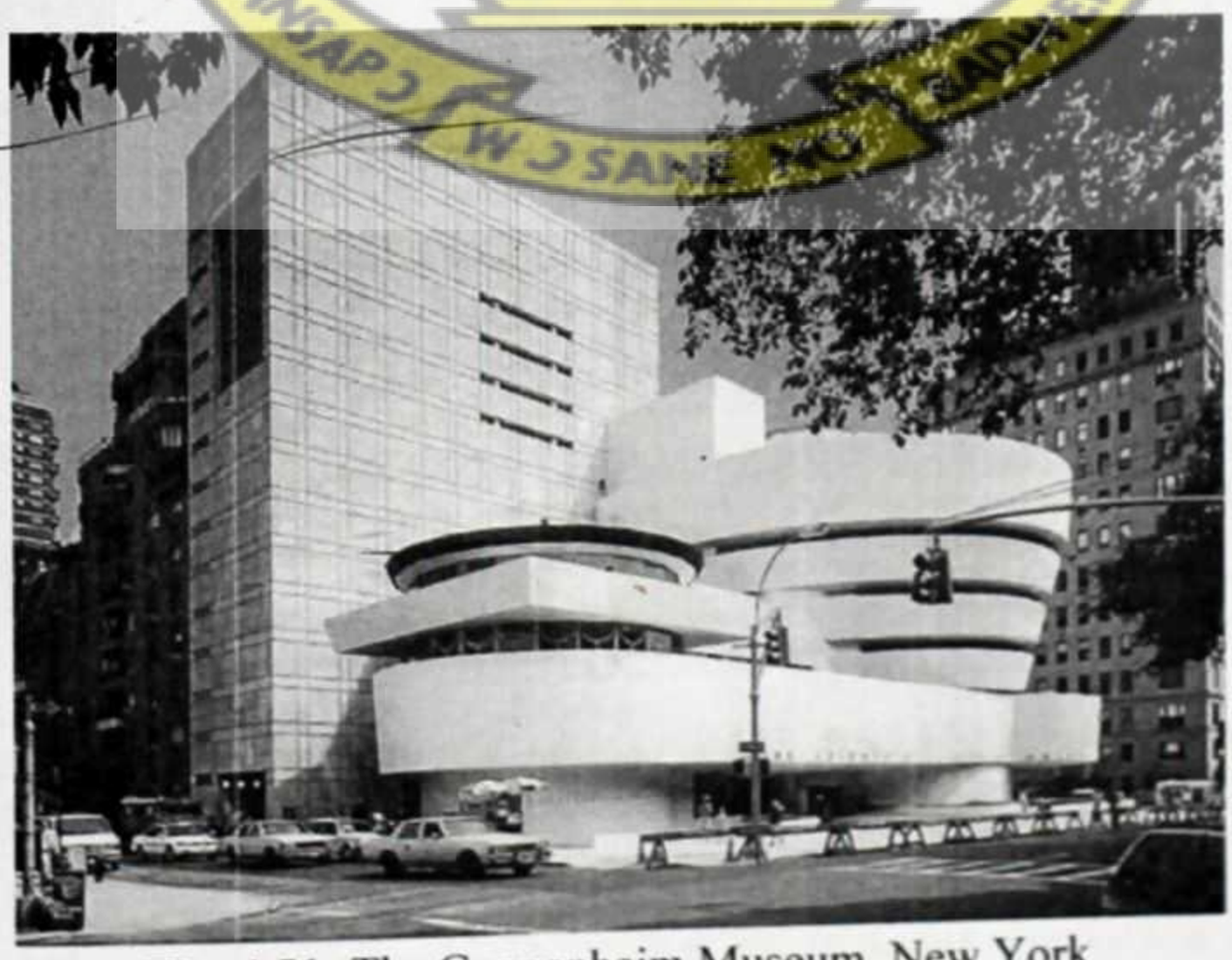

Fig. 4.51: The Guggenheim Museum, New York
Source: www.guggenheim.org/new york (2009)

i. Circulation and Movement Patterns

The main innovation in this design was the new concept of 'circulation'. Wright's aim for the museum was that it provide a perfect plasticity of presentation. He achieved this through his creation of a spiral that functioned both as circulation and as a visual icon. The exhibition as such is structured directly along this spiral ramp rather than within typical galleries. The concept for this circulation system was derived from the dynamic nature of vision. This concept of circulation therefore combines viewing and circulation in three-dimensionality on continuous spiralling ramp. Wright describes the experience as such:

"After taking the elevator to the top, the visitor 'drifts down' the curving ramp, carried along by its slow regular, pulsating movement. No level horizon line is visible across the open well - only the rising and falling shapes of the parapets, curling like undulating water." (Bhatia, 2010)

Fig. 4.52 The spiral ramp circulation
Source: Thomas (2010) www.egotvonline.com

Fig. 4.53 The dome roof of the museum
Source: Thomas (2010) www.egotvonline.com

Wright's aim for the museum was to create a space where the visitor could appreciate 'multiple vistas of the art instead of the conventional single frontal perspective.' (Hsu, 2004) He envisaged the spiral as symbol of completeness and self-fulfilment. Levine believes that the circle and spiral were associated in Wright's mind with the creation of a public space for leisure activity and cultural events, a social and intellectual gathering place (Hsu, 2004).

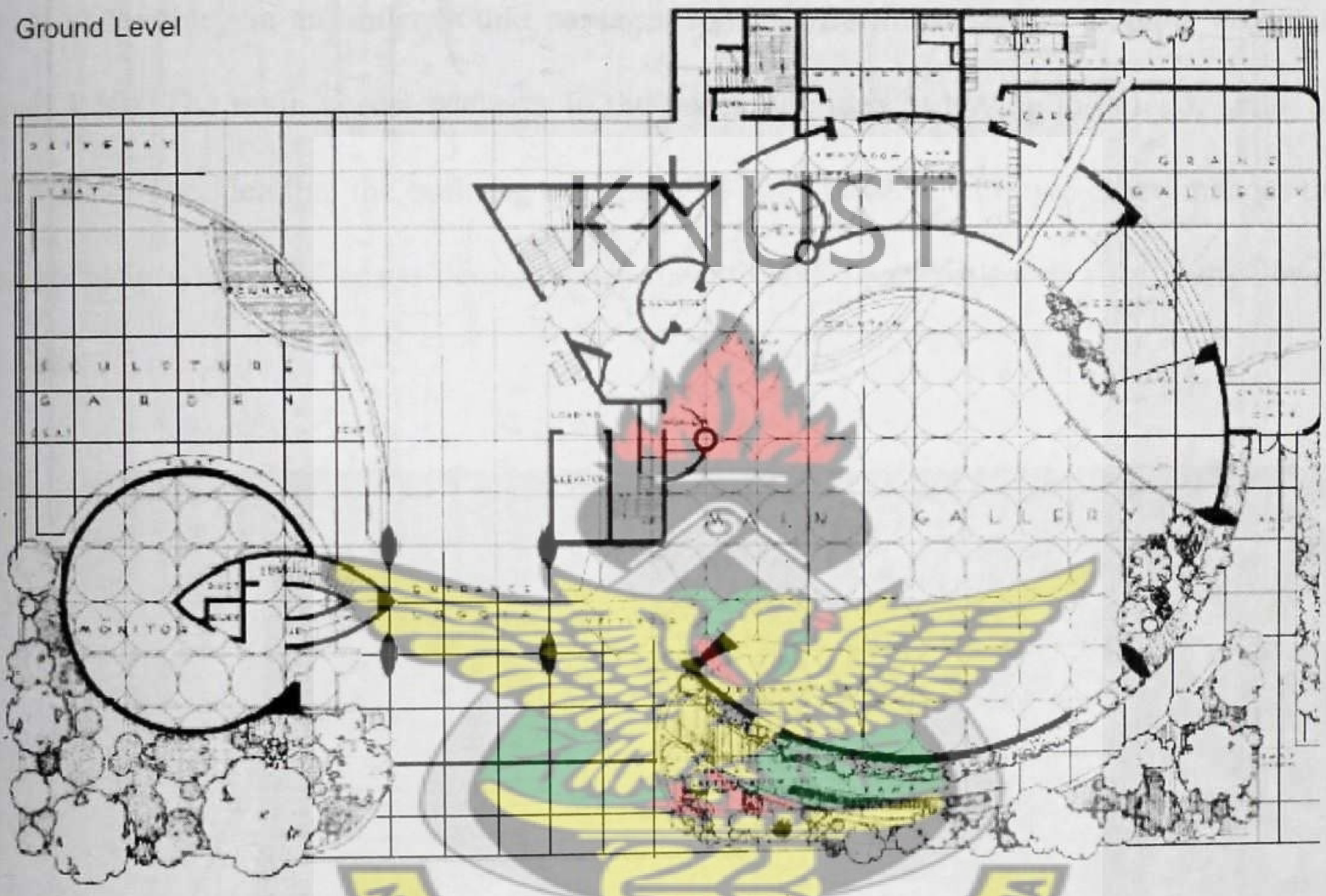

Fig. 4.54: Ground floor layout of Guggenheim Museum - circular theme
Source: authour

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i. Conclusions on Socio-Spatiality in Guggenheim, New York

Relating this to the concept of socio-spatial design, it is clear that Wright's thoughts on the museum space embraced the idea of a multi-social appropriation of the museum space. The circulation system he created was easily accessible to a wide range of visitors. By using the mainly design of the circulation network, visitors were able to relate with the space (spatial interaction), the exhibition and each other (social interaction).

c. The Jewish Museum, Berlin

The Jewish Museum is located within a post-war reconstruction sector in a largely residential section amidst a few historical public buildings that have survived. The museum exhibits the social, political and cultural history of the Jews in Germany from the 4th century to the present. It consist of about 161,000 square feet (15,000 square meters), of a twisted zigzag and is accessible via an underground passage from the Berlin museum's baroque wing (see figure 4.58). The main access portrays to the public the idea of having to defend, break out and escape. The idea that the building only has one main passage with two other linkages that end abruptly within the space demonstrates the life and uncertain survival of many Jewish families.

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Fig. 4.55 The Jewish Museum, Berlin
Source: germanycitytrip.com

Fig. 4.56 Aerial view of the Jewish Museum
Source: Hill (2008) archidose.blogspot.com

i. Spatial Configuration of the Jewish Museum

The extent of the Museum includes both the Jewish Museum and the Colliegenhaus - a symmetrical, U-shaped Baroque building with a red tiled roof. The highly abstracted structure is based on a zig-zag plan that runs from West to East. Libeskind's aim was "to build the museum around a void that runs through it, a void that is to be experienced by the public." (Hsu, 2004). Libeskind further explain his conception of the museum space:

"...it is a project about two lines of thinking, organisation and relationship. One is a straight line, but broken into many fragments; the other is a tortuous line but continuing infinitely. These two lines develop architecturally and programmatically through a limited but definite dialogue. They also fall apart, become disengaged and are seen as separated. In this way, they expose a void that runs through this museum and through architecture - a discontinuous void."[2]

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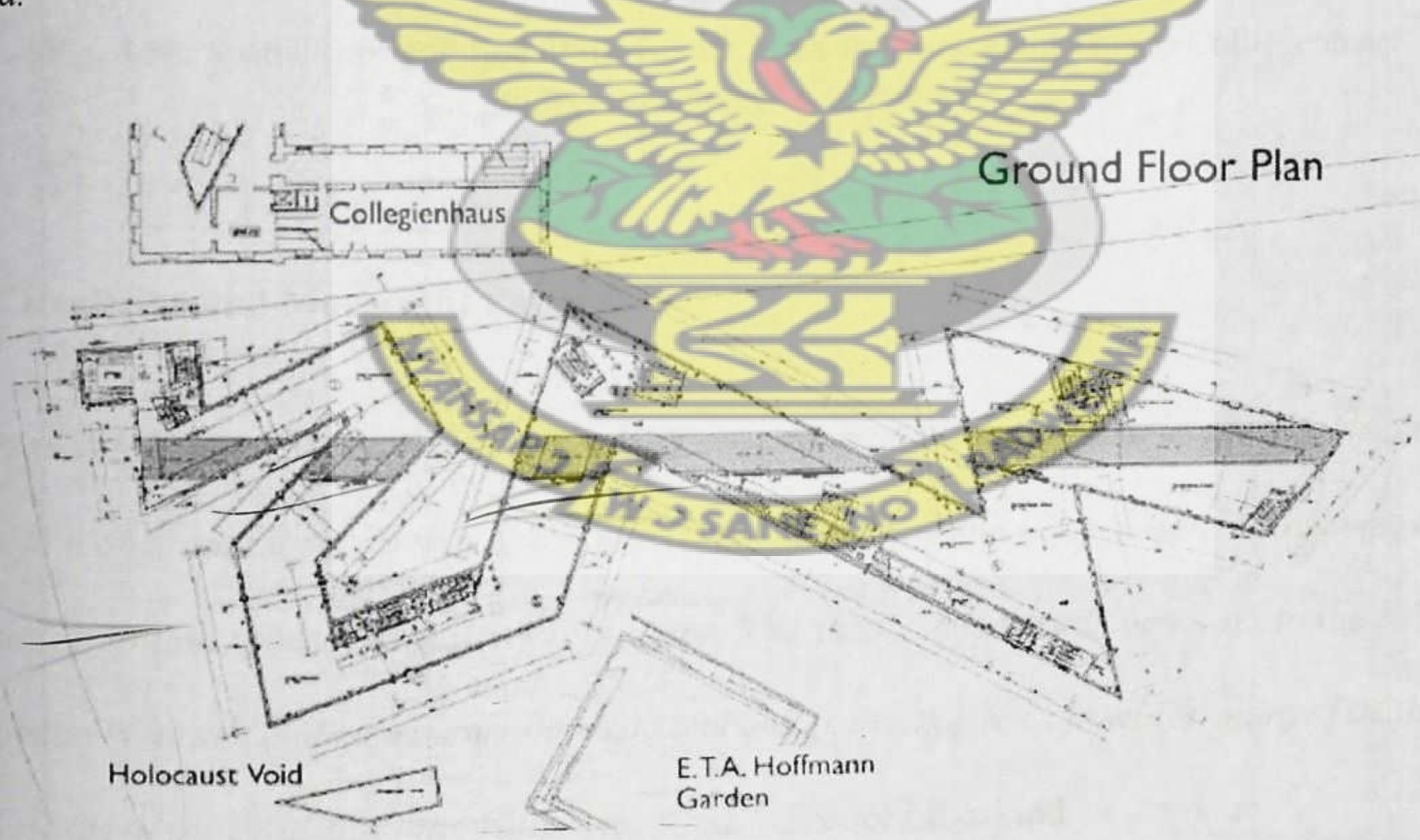

Fig. 4.57: Ground Floor Layout of Jewish Museum showing the "discontinuous void"
Source: author

As depicted in figure 4.57, the zig-zag nature of the museum space contains the void that runs through the entire space terminating at the end of each space. The internal space itself is a composition of slanted walls and slashed, narrow window openings. Libeskind explains the slashed pattern of the light openings as "defined by plotting the lines of connectivity between individual places of Jewish importance on the Berlin city map" (Hsu, 2004).

Fig. 4.58: Spatial configuration of the Jewish Museum showing linkage to Colliegenhaus
Source: wordpress.com (2008)

ii. Circulation and Movement Patterns

"There are three underground 'roads' which programmatically have three separate stories. The first and longest road leads to the main stair, to the continuation of Berlin's history, and to the exhibition spaces in the Jewish Museum. The second road leads outdoors to the E.T.A. Hoffmann Garden and represents the exile and emigration of Jews from Germany. The third axis leads to the dead end - the Holocaust Void." Daniel Libeskind

Figures 4.58 and 4.59 illustrates the nature of the museum's access and the circulation within the internal space; it shows that although there is a clear line of division between the two museum above ground, three underground axial roads connect the old and new museums.

The longest road leads into the museum itself, while the second terminates in an enclosed outdoor garden; the third also ends within the space called the "Holocaust Void" The jagged circulation patterns of the floor plans in figures 4.60 and 4.61 depict the displacement of the spirit. The exhibition spaces are connected to each other via bridges. Museum vertical circulation is by two (2) lifts and stairs; they are positioned at the entrance and half-point of the building. The floor plans also show the spine of void spaces and the sequence of exhibits.

The voids represent the central structural element of the new building and the connection to the old building form. The voids interrupt the circulation and are connected by short bridges.

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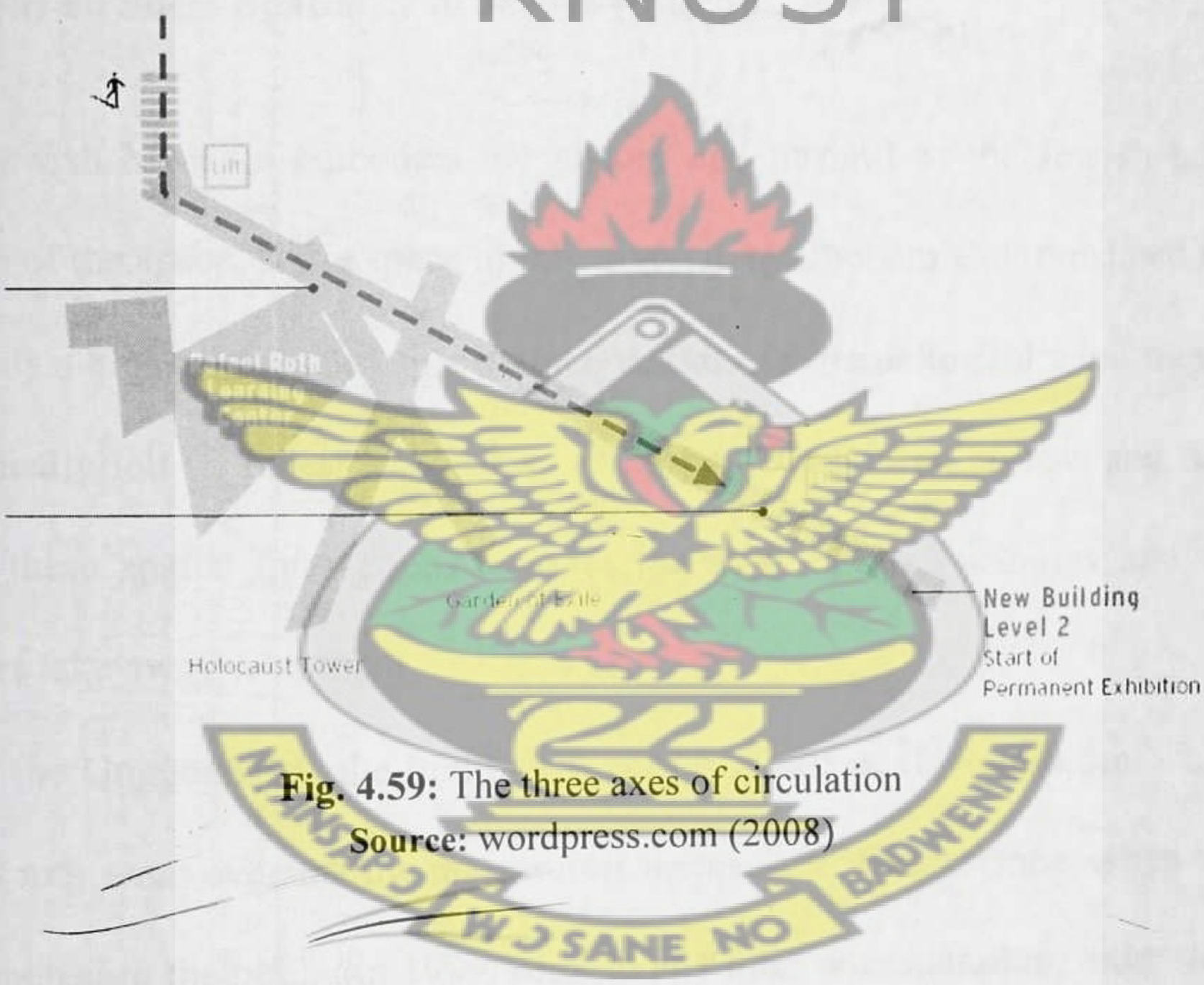

Fig. 4.59: The three axes of circulation
Source: wordpress.com (2008)

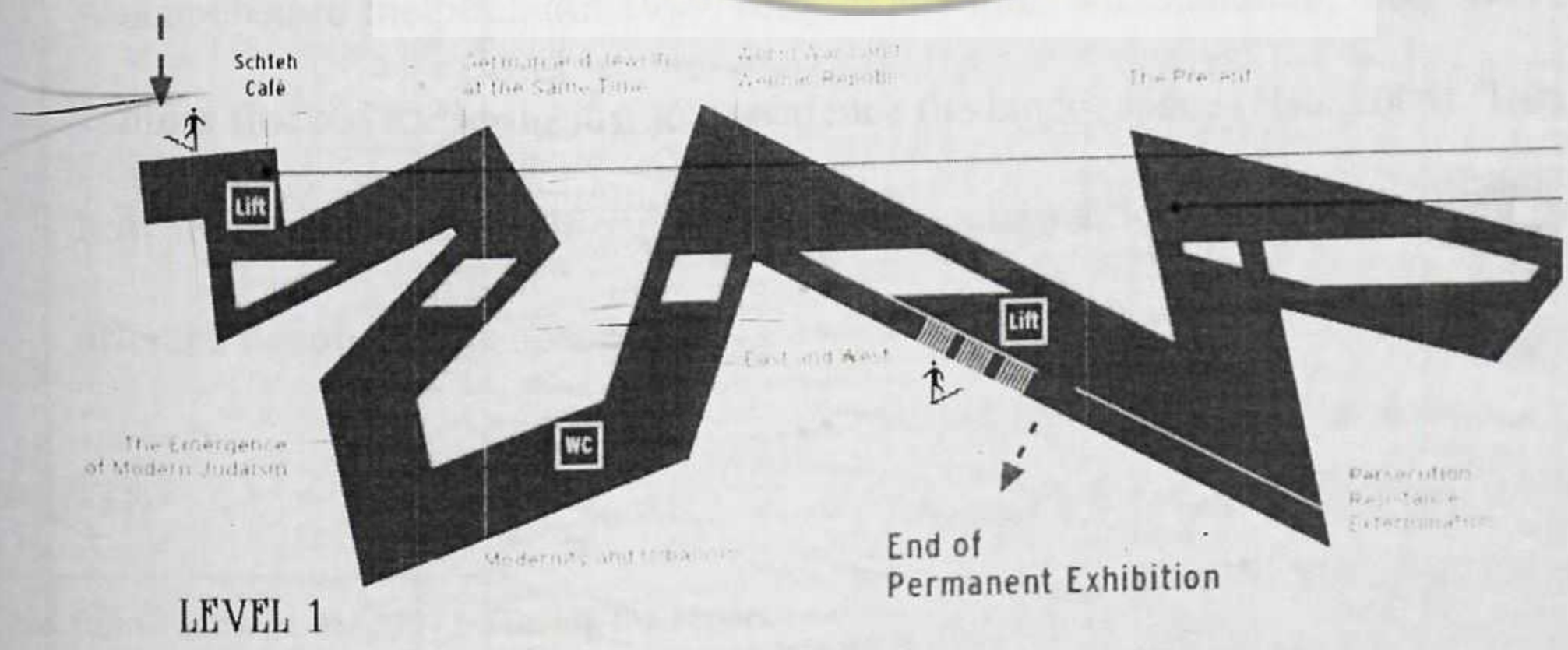

Fig. 4.60: First floor Layout - Jewish Museum
Source: wordpress.com (2008)

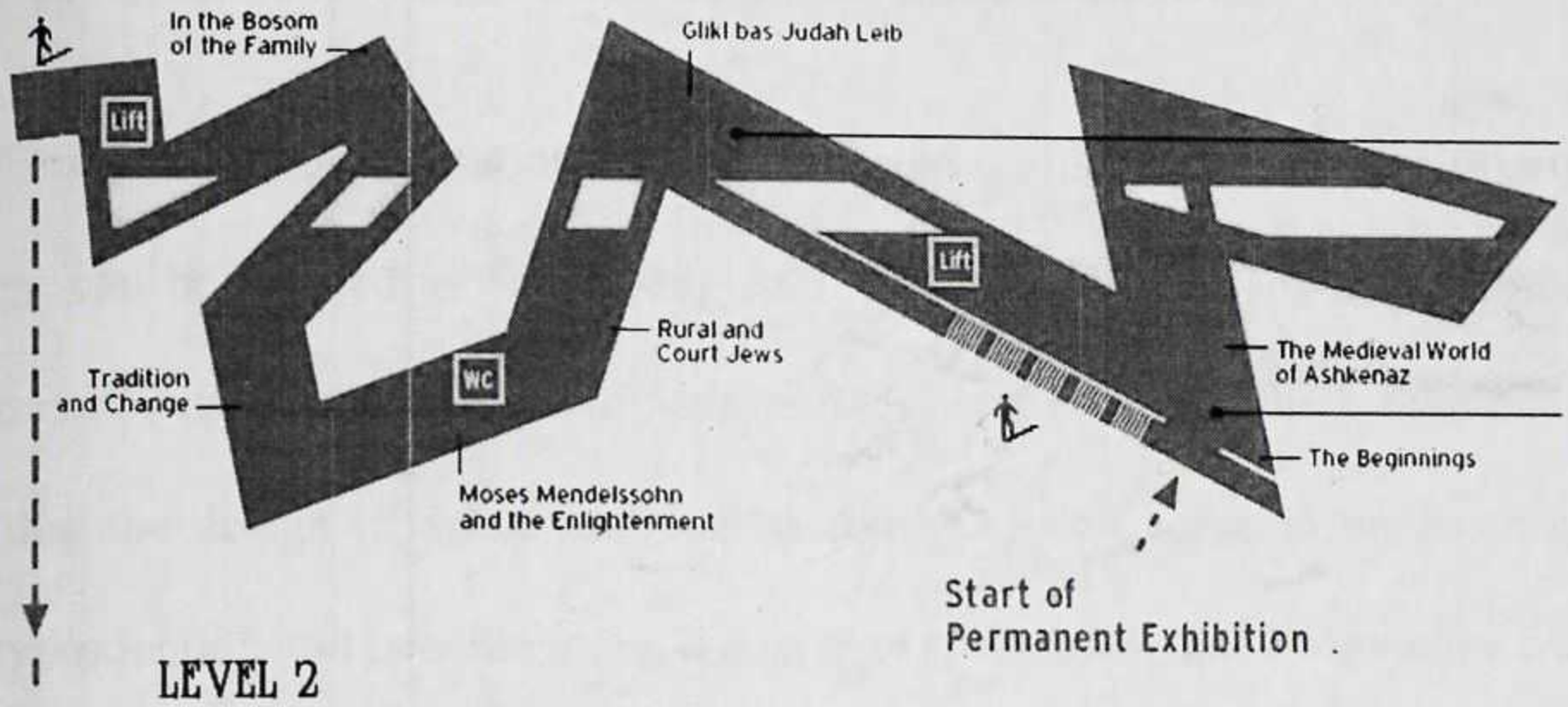

Fig. 4.61: Second floor Layout - Jewish Museum
Source: wordpress.com (2008)

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iii. Conclusions on Socio-Spatiality in Jewish Museum, Berlin

- The Jewish Museum embodies the history and turmoil of the Jewish people in the design of the space. It is a space highly given to symbolism and translated meaning.
- There is a high response to space, since visitors are made to feel what may have been historically felt by others - the sense of despair, loneliness, sorrow and darkness. As such, these spatial interactions account for most of the meanings and experiences visitors take away with them.
- As in the Guggenheim, the building becomes a part of the exhibition - and to some extent may even overshadow the exhibits themselves. For instance, when the building was opened to the public in 1999, prior to any interior installation, more than 350,000 visitors flocked to Berlin just to experience the empty space (Hsu, 2004). This proves how the museum in itself can attract multi-social participation where each person is affected deeply by the space.

ENDNOTE

1 Cited from Psarra et. al (2007), Tracing the Modern

2 Cited from Hsu (2004), Circulation in Museums

4.4.2 DEVELOPMENT OF THE SOCIO-SPATIAL DESIGN MODEL

The significance of a conceptual or theoretical design tool is supported by Hillier (2007). If architecture can be defined as *"the taking into reflective thought of the non-discursive, or configurational , aspects of space and form in buildings"* (Hillier, 2007), then one begins to discover that the design of space and spatial configurations cease to be about cultural or physical reproduction and become more *'a matter of speculative and imaginative enquiry'*.

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i. Macro-level socio-spatiality - Urban design and development

Existing concepts on socio-spatiality and models of socio-spatial design begin at the level of urban development or at the creation of an urban environment. Schaick (2005) gives a visual interpretation of Lefebvre's written description of a socio-spatial model as shown in figure 4.63. Lefebvre defines the term 'social space' as such: "(Social) space is not a thing amongst other things nor a product among other products: rather, it subsumes things produced, and encompasses their interrelationships in their co-existence and simultaneity... It is the outcome of a sequence and set of operations, and thus cannot be reduced to the rank of a simple object.." (Schaick, 2005). This means that the social space is seen as the resultant product of all the existing variables that present themselves within some relationship. Hillier (2003) also discusses the new direction of architecture, using 'space syntax' analysis, as being focused on space - the places through which people move and in which **social** and economic activities are enacted. Following the discovery in the early 1980s of a link between properties of spatial layouts and patterns of pedestrian and vehicular movement which allowed definitive forecasts of actual pedestrian flows (Hillier, 1982). Hillier states that the issues of materiality – surface, texture and style – come secondary to those of design techniques for defining space and spatial networks for the variety of users (Hillier, 2003). This concept included ways of

representing what people see as they move through space: **visual field and lines of sight,** with the aim of creating spaces with the social needs and perceptions at the core of design - to develop space from the user's perspective (see figure 4.62).

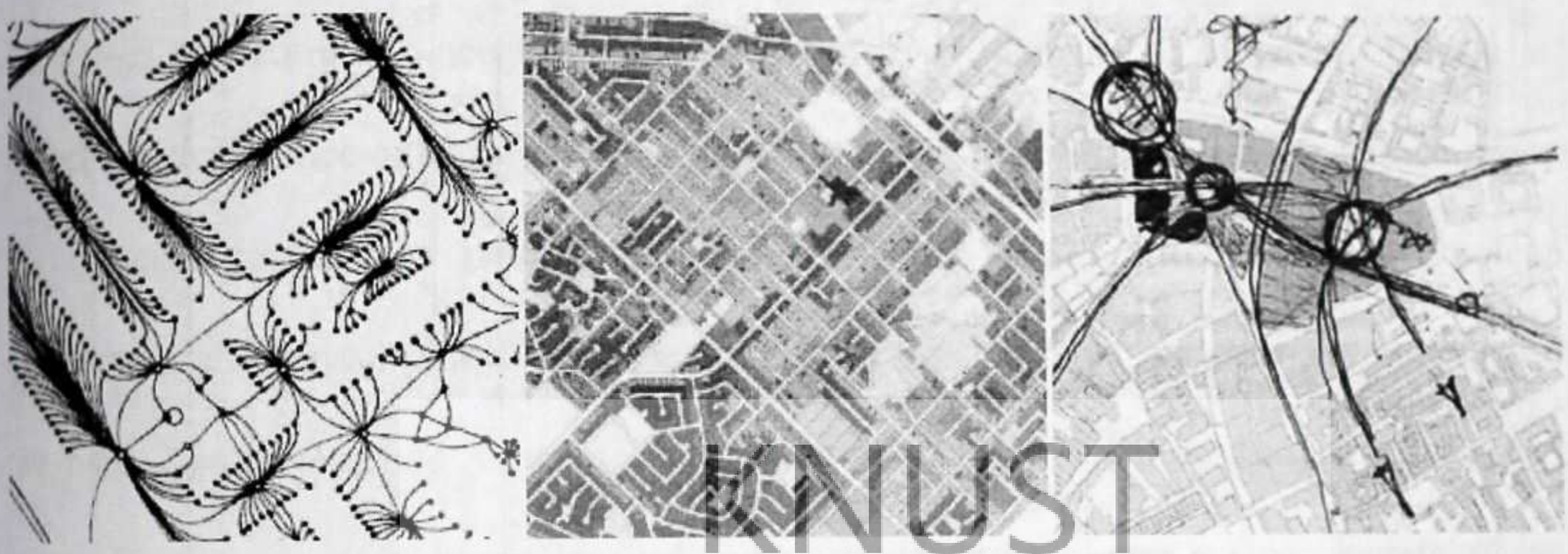

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Fig. 4.62 3 Various scales of urban development showing the use of space syntax
left: Somers Town, London; **middle:** Gosnells, Australia; **right:** Elephant and Castle, London
Source: Hillier

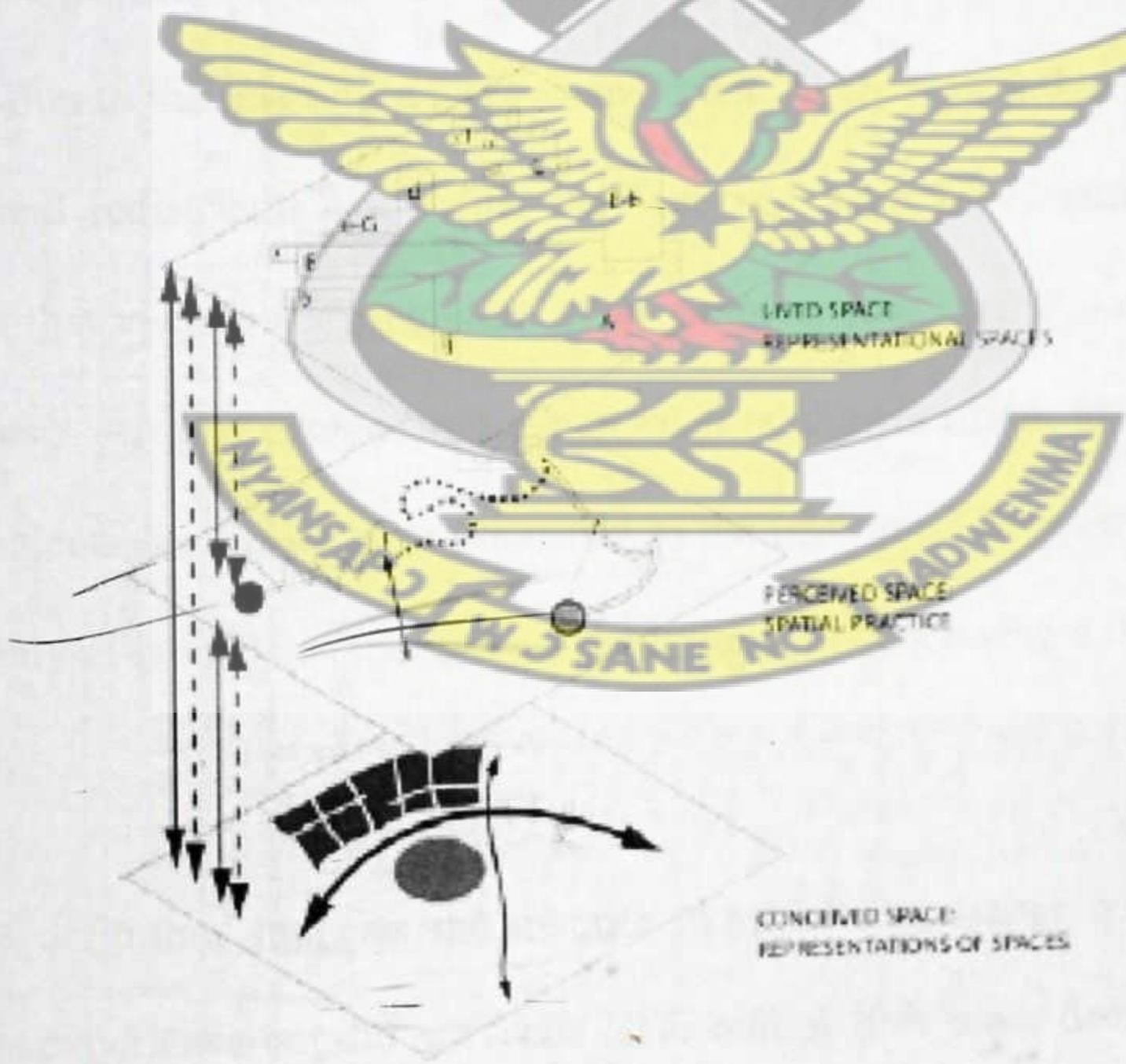

Fig. 4.63 3 Visual interpretation of the three layers comprising Social Space (Lefebvre, 1991)
below: conceived space; **middle:** perceived space; **top:** lived space
Source: Schaick (2005) Integrating Social and Spatial Aspects of the Urban System

ii. Micro-level socio-spatiality - The Museum

Various definitions on social museum spaces have been addressed so far. Thompson's definition for the ***'dynamic museum environment'*** was 'one that can produce a variety of outcomes by taking into account the social (visitor) and the spatial (museum) factors, which affect the experience outcome. He proposes that all visitor characteristics and spatial museum components interact to produce 'mediators', which are reactions that are potentially observable and measurable. These mediators function, in most instances, in combination to produce 'goal-referenced outcomes' (Thompson, 1990). Fleming's idea of the [social] museum was one of a ***'multi-layered'*** space which must please a great variety of people (Fleming, 2006). Simon's (2010) definition of the ***'participatory cultural institution'*** was "a participatory cultural institution as a place where visitors can create, share, and connect with each other around content. Create means that visitors contribute their own ideas, objects, and creative expression to the institution and to each other. Share means that people discuss, take home, remix, and redistribute both what they see and what they make during their visit. Connect means that visitors socialize with other people—staff and visitors—who share their particular interests. Around content means that visitors' conversations and creations focus on the evidence, objects, and ideas most important to the institution in question" (Simon, 2010).

A following analysis is made of the various definitions, in conceiving a definition of a socio-spatial museum:

- Simon's definition suggests the manner in which the visitor contributes to his/her museum experience but did not focus on or outline how those decisions of visitors are ***influenced*** by the exhibition space.
- Fleming however supports the idea of the manner in which the exhibition space also ***interacts*** with the visitor. He introduces the idea of ***multi-layers***, where several

interactions can be seen to play or interplay in the museum experience. These ***interactions*** however are not outlined within his definition.

- Of the three definitions, Thompson's was the only one that was supported graphically, in 'the Model of the dynamic museum environment' to suggest the manner of production of the various goal-referenced outcomes. Thompson's model however does not detail the various combinations of the social and spatial factors and how the mediators affect each interaction.

It is clear that there is room for contributions to these definitions which will give further clarity to socio-spatiality in museum spaces. This is to be achieved by focusing on the units of a social space: private, semi-private, semi-public and public zones of a space. Two theories are applied in formulating a model of the envisioned museum space; they are the principle of **'negative - positive attraction'** and the principle of **'negative - positive pressure'**.

a. Negative - Positive Attraction

As people move through a space they orient themselves with their physical appreciation of space: either as *wide* or *narrow* (figure 4.64: left), *high* or *short*, *straight* or *curved* or *slanted* - all physical descriptions of the space based on personal physical interactions. However, when a visitor encounters the presence of other persons within that same space, that instance of social interaction changes the nature and dimension of the visitor's impression to include social descriptions such as, *spacious*, or *crowded*, *busy* or *leisurely* to give a sense of the degree of public occupation. Both of these physical and social **'encounters'** result in some manner of **'interaction'**. The manner of the interaction takes into account:

- the ability of the spatial and social environments to effect change
- and the visitor's ability to be influenced - his/her predisposition.

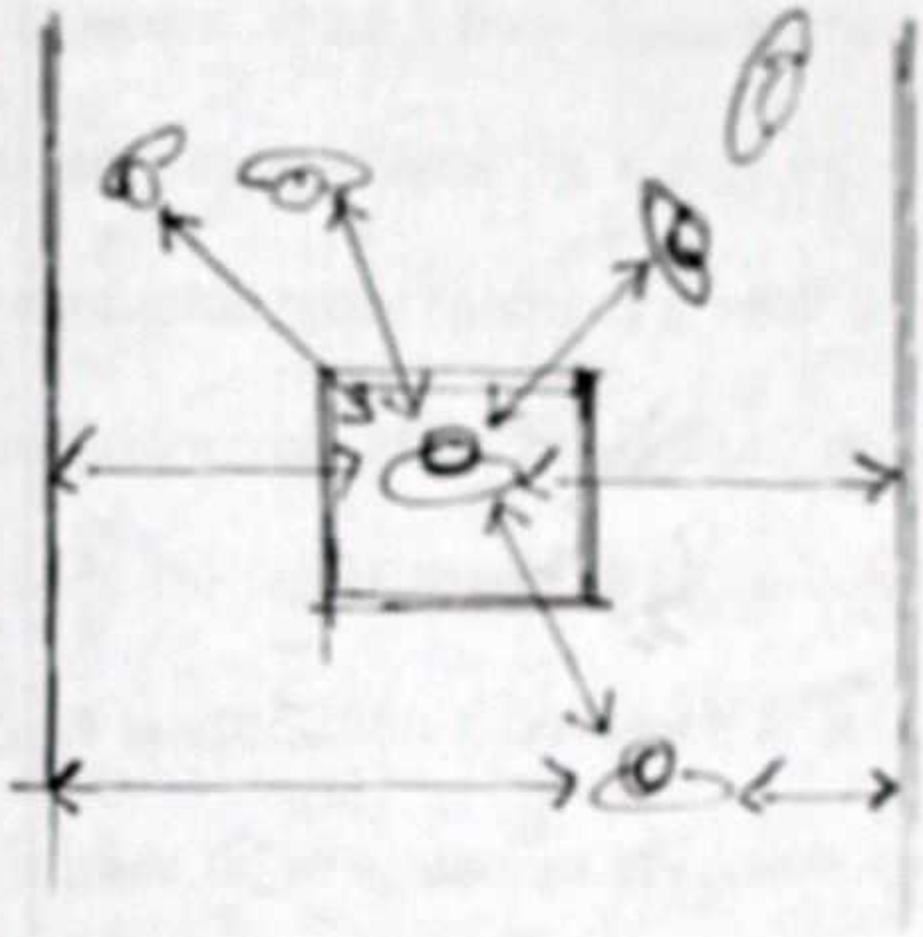

Fig. 4.64 State of interaction of an individual within a spatial and social environment
Source: Author

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The application of the principle of ***electromagnetic fields*** supplies descriptive meaning to the theory of **'negative-positive attraction'**. Electromagnetic theory states that, *electric charges attract or repel one another with a force inversely proportional to the square of the distance between them: unlike charges attract, like ones repel.* Similarly, the 'environments' within an exhibition space are theorised as having characteristic charges which form attraction fields in connection with one another (see figure 4.65).

Fig. 4.65 Theoretical force fields within an exhibition space
(left) positive charge; (right) negative charge
Source: Author

When visitors enter the museum space, they become 'users'. Users possess certain predispositions, motivations and expectations; in theory, they are regarded as 'partially charged'. Users explore the exhibition space to satisfy a need for an experience (for instance, knowledge). For an encounter to result in an interaction, the theory of 'negative-positive attraction' must apply to both the environment and the visitor. For this to occur, the environment must first possess an attraction field which is able to either attract or induce a 'charge' unto the user, i.e., it must be in a 'state of attraction' to affect a visitor. The user is either fiercely 'compelled' towards that environment or is gradually induced by it or is not affected by it at all, i.e., there is no interest generated from that exhibit; similarly it is also possible for environments to 'repel' or 'attract' one another, thereby revealing the narrative sequence of the exhibition. 'Unlike environments' are theorised as exhibits that link to each other in the exhibition sequence, while like environments do not directly link to each other.

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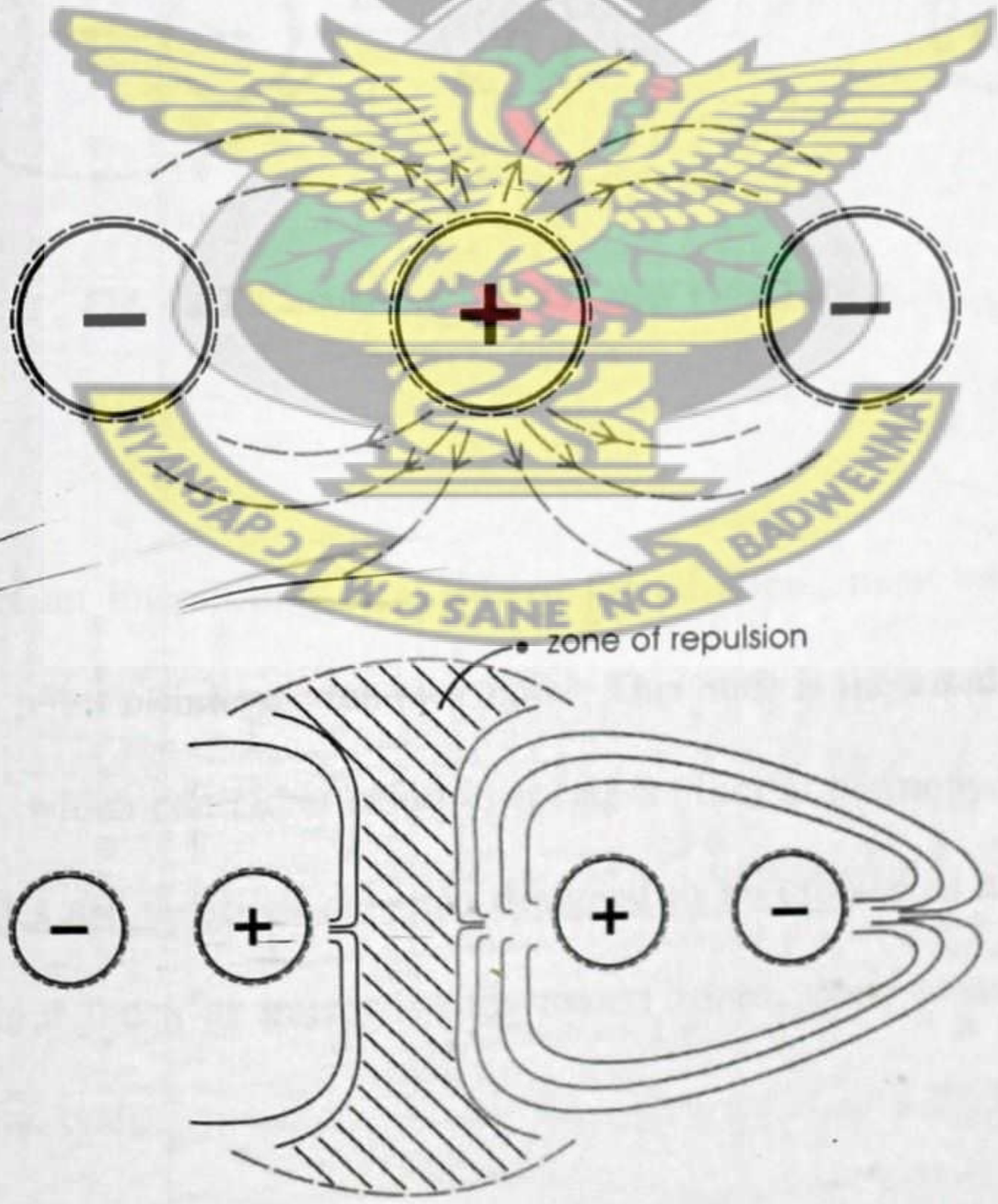

Fig. 4.66 Zones of attraction (top) and repulsion (below)
Source: Author

Figure 4.67, 4.68 and 4.69 show three (3) different sequencing of an exhibition. In figure 4.67, the attraction flow analysis shows that exhibits are arranged in an alternating linear sequencing; the isolated section on the right side shows that manner in which the exhibits link to one another to create the narrative of the exhibition. A 'circular' or 'closed loop' flow pattern is revealed, with a central core which is theorised as being the 'neutral zone'. This central core may function as an area for public distribution (reception space), respite or relaxation (lounging areas) or may also serve as a circulation core. The combination of all three uses is also possible given the appropriate area of the core to support all three activities.

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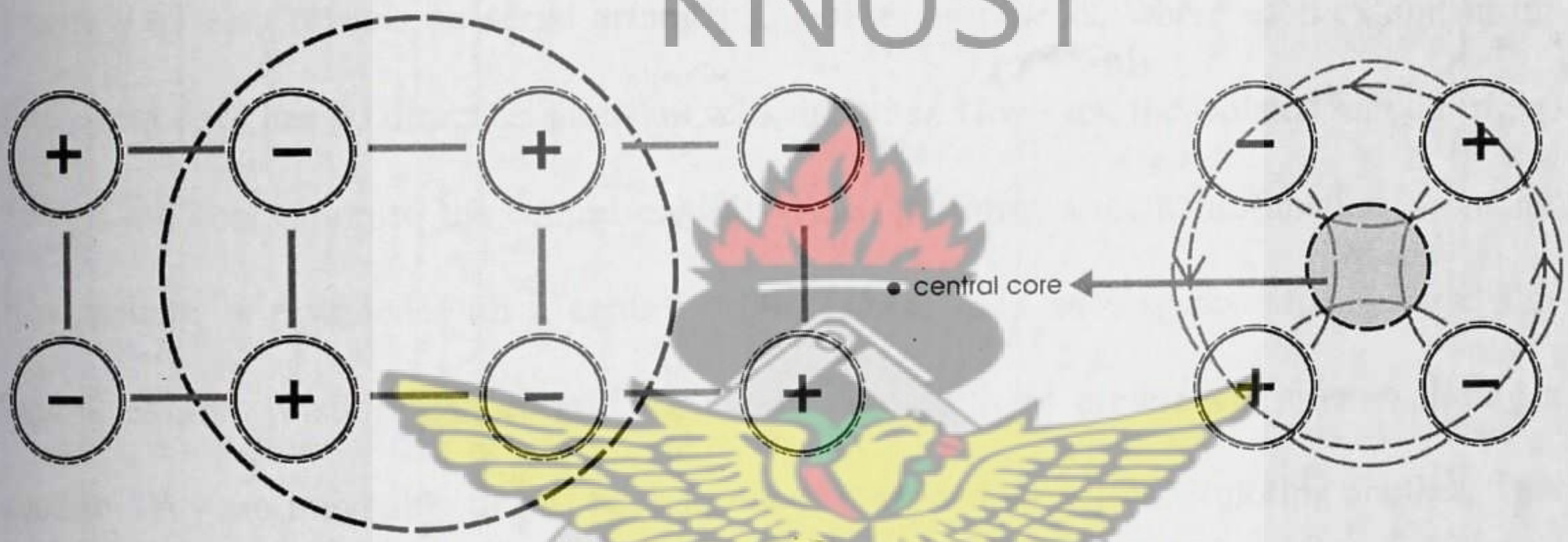

Fig. 4.67 'Circular' or 'Closed Loop' Flow Pattern
Source: Author

Figure 4.68 outlines an intersecting flow pattern for an arrangement which results in the creation of a strong point of intersection or a 'node'. This node is theorised as a high point of interaction of users, which can either result in social conflict or harmony. In order to create harmony, these nodes are theorised as being designed to be utilised as a public interactive spaces within the tour (such as interactive discussion zones, game areas, sales areas etc), rather than circulation paths.

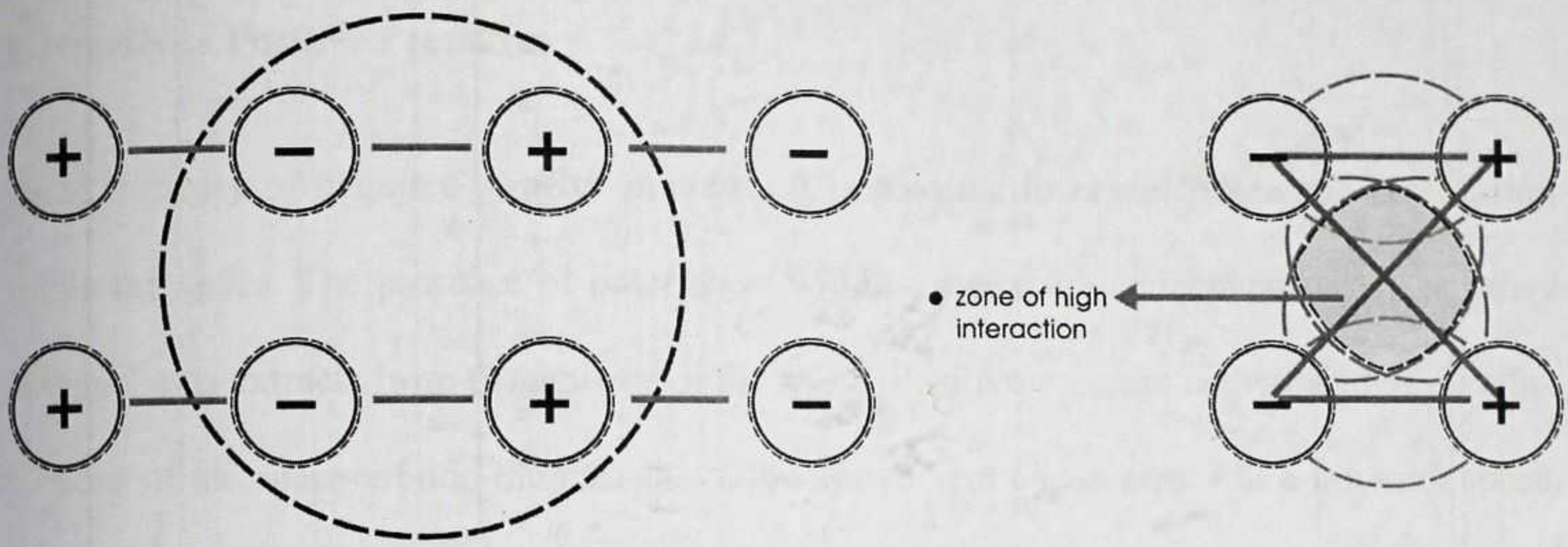

Fig. 4.68 'Intersecting Flow Pattern
Source: Author

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Figure 4.69 also reveals an serial arrangement of environments, where each exhibit in the linear sequence has no direct relationship with the other. However, the isolated section (right) reveals the connection to the central exhibit, which performs a thematic function. A 'radial' flow pattern is revealed with a central origin, where each sub-aspect radiates round this central exhibit. Visitors can choose their individual paths of preference; after exploring a section, they are inevitably drawn back to the central exhibit, before exploring another. This convergence causes visitors to gain a high awareness of the subject matter, where all their impressions are related back to the main context. The arrangement helps to stimulate a high level of social interaction within the exhibition where different perspectives are created and discussed within context.

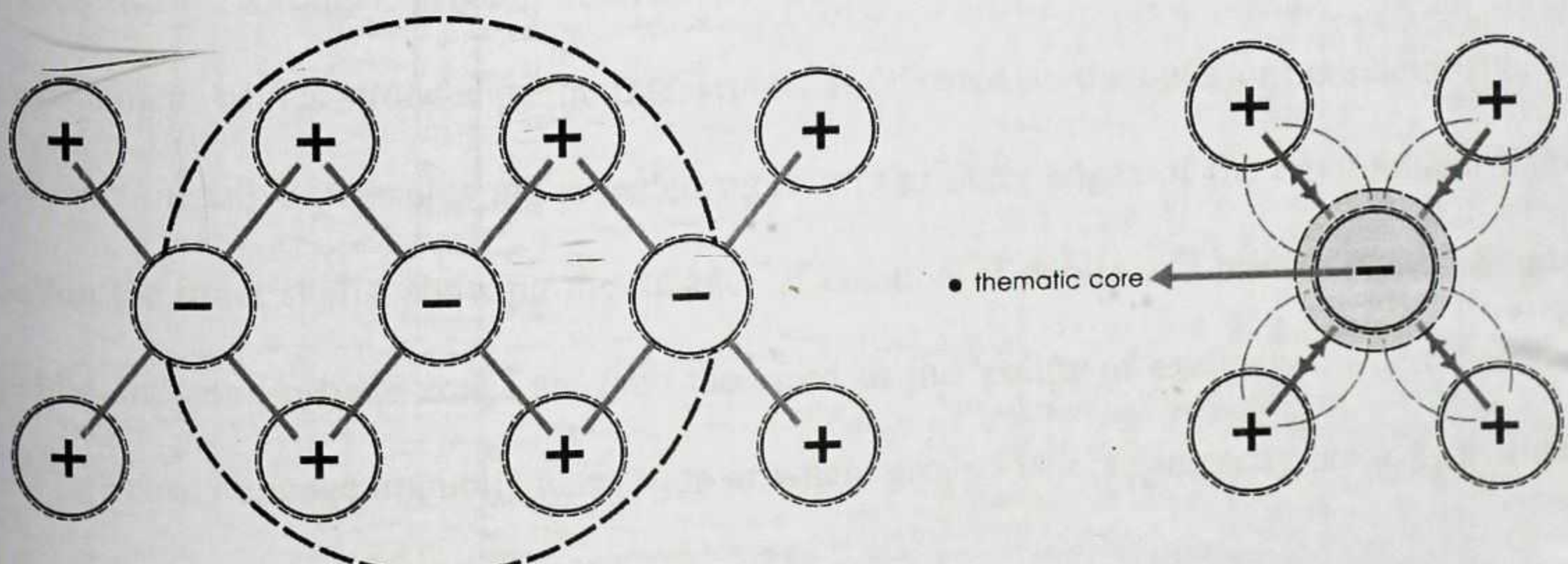

Fig. 4.69 'Radial Flow Pattern
Source: Author

b. Negative - Positive Pressure

Using a theory of negative-positive pressure, it is possible to *reveal* **place** and **circulation** within the space. The presence of other users within a space are conceptualised as 'negative pressure' as it extracts from the entirety of the space. Positive pressure is theorised as all other portions of the space around the user that allow movement and access. For a museum space, where there must be a constant, dynamic interchange of positive and negative pressures within the gallery space (due to the activity patterns and arrangement of exhibits), it is almost impossible for the space to remain unchangeable. For this theory to reveal the visitors' appropriation of space (the creation of private or public zones), this theory must be integrated with that of negative-positive interactions. As such, it follows that points at which public interactions are high are logically 'negative pressure' zones; a large concentration of negative pressures with high levels of interactivity results in the creation of public zones. Similarly a low concentration of negative pressure with a high level of interaction results in the formation of private zones. Strong positive pressure zones are revealed as the main circulatory routes.

In figure 4.70, it is theorised that each exhibit environment may comprise a number of circular 'shells' (depending on the scale and attraction index of the exhibit), which form the concentric rings of the environment. The inner 'nucleus' forms the actual exhibit. Theoretically, stronger private interactions are built within the innermost shells of the environment whiles stronger public interactions are formed on the outer or peripheral shells. As such, negative pressures are revealed more on the outer edges of the environment than within the inner shells, showing the manner of creation of public and private places. Semi-public and semi-private zones are then theorised as the 'points of exchange', where private visitors easily engage in public interaction or where group visitors can easily break away into more private interactions with exhibits.

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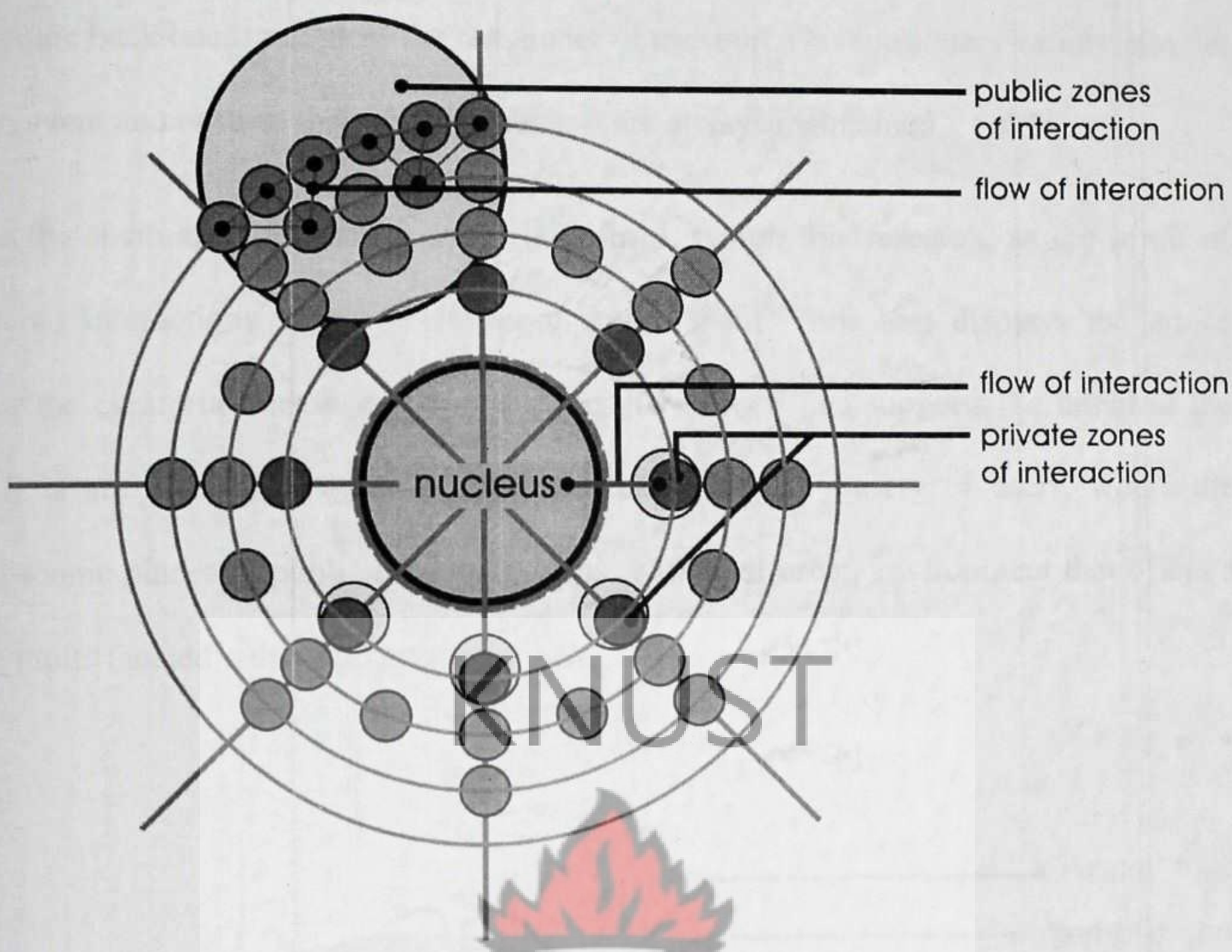

Fig. 4.70 Public and Private Zones around an exhibit
Source: Author

The result of this theoretical discussion therefore is the creation of a theoretical design model that combines all of the 3 discussed scenarios of flow patterns (see figure 4.71). The merging of these three models is in order to give a total visual impression of the relationship that exists among the three points of interaction (cores and nodes). The interrelationship of these zones reveals ~~an ideal~~ relationship within the gallery space. The neutral zone forms the outer layer of the socio-spatial gallery; this zones allows peripheral visitors to relate back to the heart of the exhibition by means of navigational markers, it allows visitors to experience rest points within the tour in order to avoid visitor fatigue, it also may allow for circulation unto other levels of the tour. The interactive zones permits high levels and wide variety of public interaction amongst visitors. The main circulation axis allow for visitors to have a clear means of orientation and access to each environment. Thematic cores can allow visitors the variety of subjects to select to explore. Visitors who attain satisfaction within a daily session

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can then come back later to explore the remainder of the tour. This introduces variety into the exhibition event and ensures that visitors' interests are always maintained.

Therefore the socio-spatial museum space is defined, within this research, as the result of multi-layered interactions within a showcase environment - one that displays the art or artefact or the curatorial message within a space that reflects and supports the intent of the display. It is an environment that is appropriated by a wide variety of users, where the exhibits become places of public or private focus, within an urban environment that offers a dynamic, multi-faceted cultural experience.

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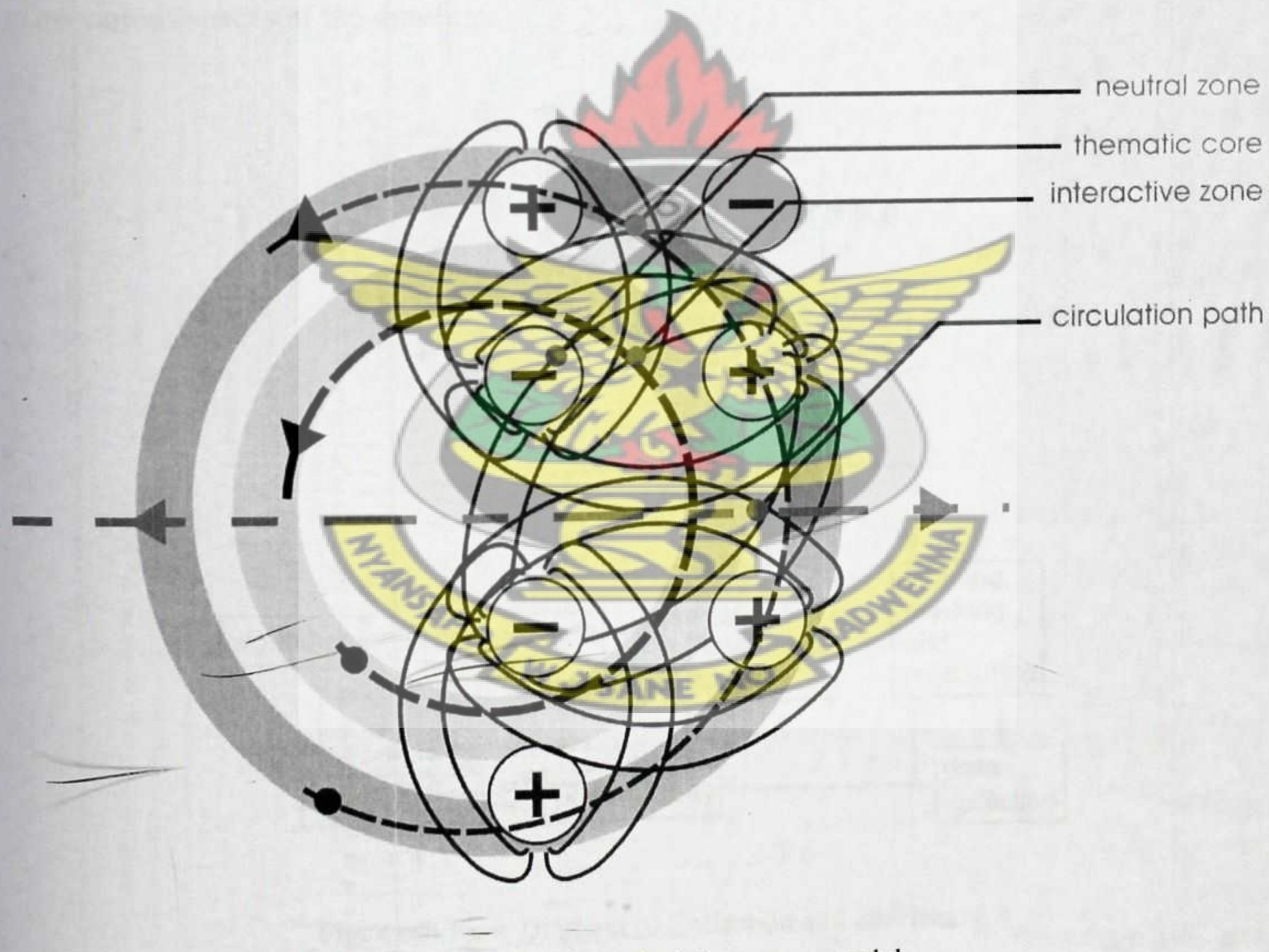

Fig. 4.71 The socio-spatial museum model
Source: Author

4.4.3 TECHNICAL STUDIES

The intricacies involved with the various design aspects of a museum are outlined and assessed in this section according to the main issues of circulation (services), lighting and showcasing, building and material security, and internal temperature requirements for galleries/exhibition spaces.

i. Circulation of Collections and Services

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Figure 4.65 shows the flow of circulation from the point of main delivery to the distribution to the various spaces of the museum.

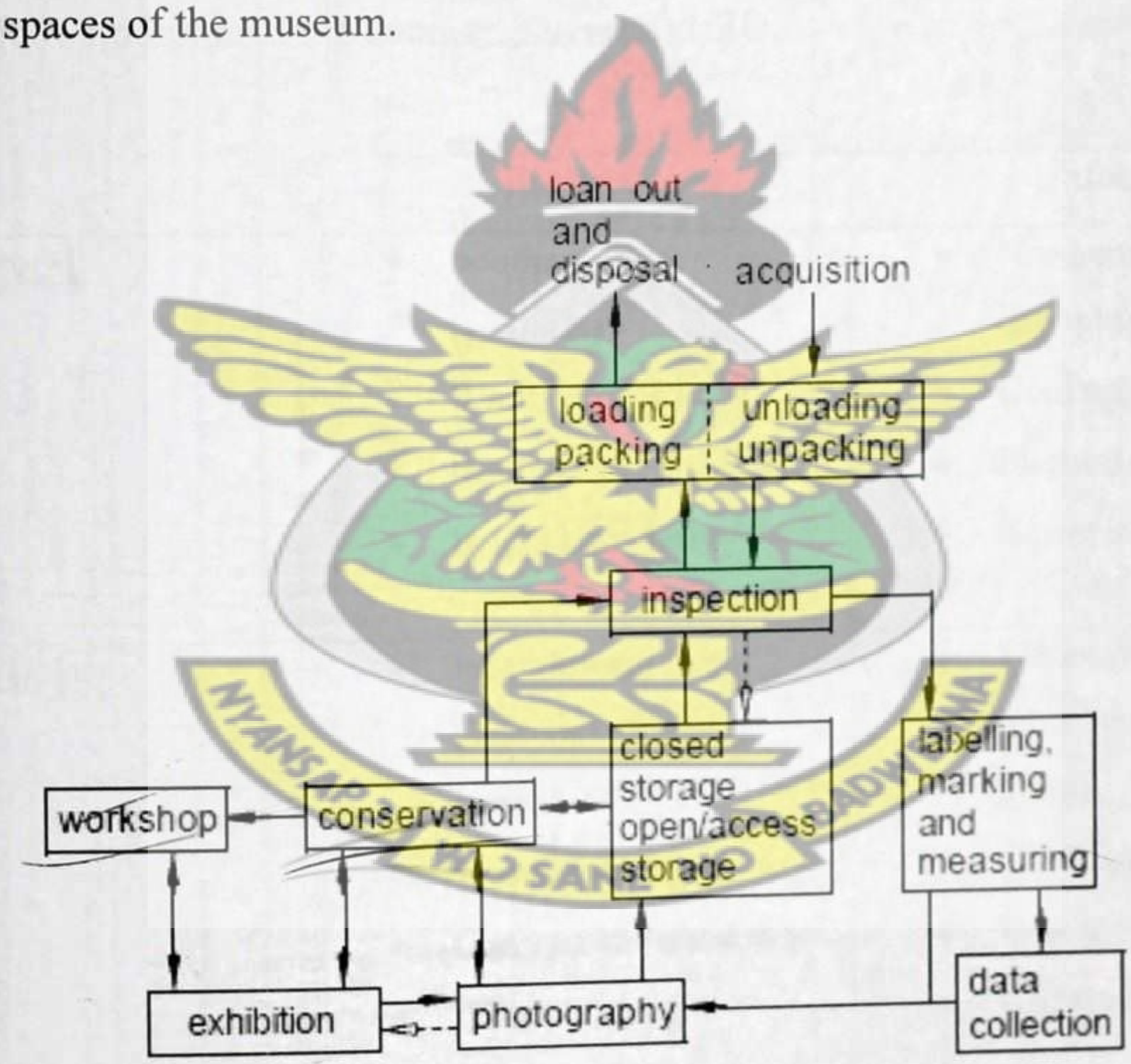

Fig. 4.66: Flow Diagram of Collection and Services
Source: Adler (1999) Metric Handbook

ii. Museum Lighting

Adequate and appropriate lighting systems are crucial to the success of a museum. This section discusses both natural/daylight and artificial light technologies appropriate for a museum space. The two (2) main types of light sources available for use are:

- **Daylighting:** Natural sunlight
- **Artificial lighting:** the types of artificial lighting systems available for use include Tungsten, halogen spotlights, fluorescents, Velarium (ceiling diffusers), fibre optics, light bulbs, discharge lamps, special case (fibre-optics, low proportional of ultraviolet and infrared minimises the damage potential) LED.

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	Focused	Unfocused
<u>Natural:</u>	• Southern light (sunlight) • Warm and variable • Contrast and shadows • Bright and glaring	• Northern light (overcast daylight) • Cool and uniform • Flat and soft shadows • Lower contrasts
<u>Artificial:</u>	• Incandescent (clear glass and discharge lamps • Warm light • Contrast and shadows • Directional light	• Fluorescents, incandescent (frosted glass) • Cool light • Low modelling • Diffused, general light

Table 4.6: Characteristics of lighting: sources and quality
Source: Adler (1999) Metric Handbook

Direct sunlight is not acceptable to light any of the museum collections and certain light-sensitive installations; UV radiation must be effectively eliminated from all light reaching a

collection item. The maximum light dosage recommended for different categories of collection item is summarised in Table 4.7.

Type of collection	Dosage (kilolux-h)	Notes
Objects specially sensitive to light, example textiles, costumes, watercolours, tapestries, prints and drawings, manuscripts, miniatures, paintings in distemper media, wallpapers, gouache, dyed leather. Most natural history items, including botanical specimens, fur and feathers	200	No natural daylighting; lighting only possible to achieve with artificial light systems
Oil and tempera paintings, undyed leather, horn, bone and ivory, oriental lacquer	650	Moderate sensitivity to light. If a daylight component is used high UV reduction is necessary
Metal, stone, glass, ceramics, jewellery, enamel, and objects in which colour change is not of high importance	950	Mostly insensitive to natural light. Higher dosage is possible but usually unnecessary

Table 4.7: Characteristics of lighting: sources and quality
Source: Adler (1999) Metric Handbook

The main museum spaces that require lighting considerations are:

- Galleries, Exhibition Spaces - Display/Showcase lighting
- Lab and Research Areas, Conservation Rooms - Work lighting
- Artefact Storage Sections - Work lighting
- Staff and Service Zones - Work and Emergency lighting
- Public/Visitor Zones - Regular and Emergency lighting

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Recommended maximum daylight dosages for various types of artefacts

The type of lighting for display or showcasing purposes must be selected in relation to the way the visitors' eyes can adapt to levels of intensity, change (for instance, colour) and contrast. Figure 4.67 shows how the visitor's sightlines relate to the placement and incidence of light.

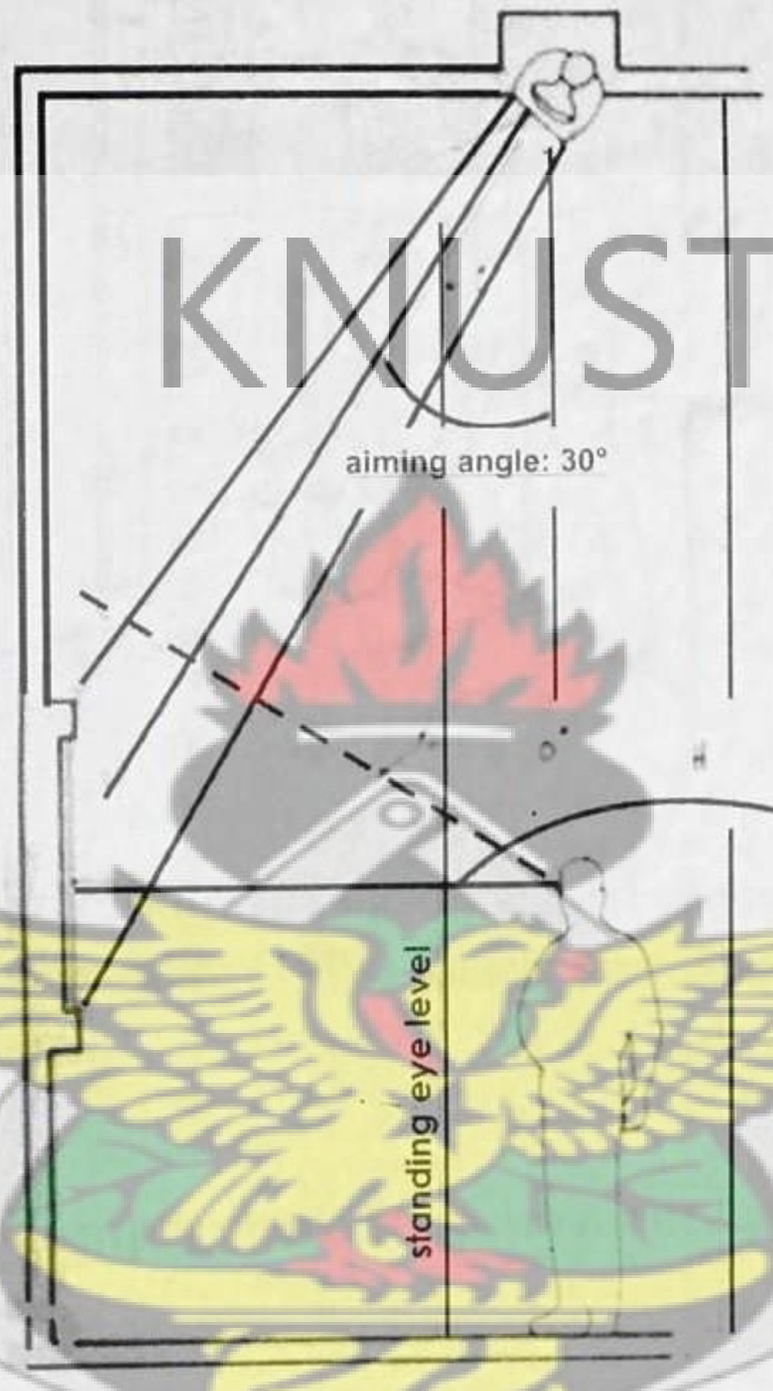

Fig. 4.67: The relation of sightlines to light
Source: Adler (1999) Metric Handbook

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iii. Museum Display and Showcasing

The communications strategy of the exhibition must be determined from the onset to ensure a good interface between the public and the exhibition message as well as the public and the museum staff (Adler, 1999). Media tools available for use include graphic display, audio-visual aids, animatronics, tableau and reconstruction, interactive environments, etc. These must be incorporated on a range to satisfy a wide appeal of visitors. All services that run the

various media tools must be co-ordinated into the design of the museum space itself to ensure the success of the museum space and the exhibition in communicating its message to visitors.

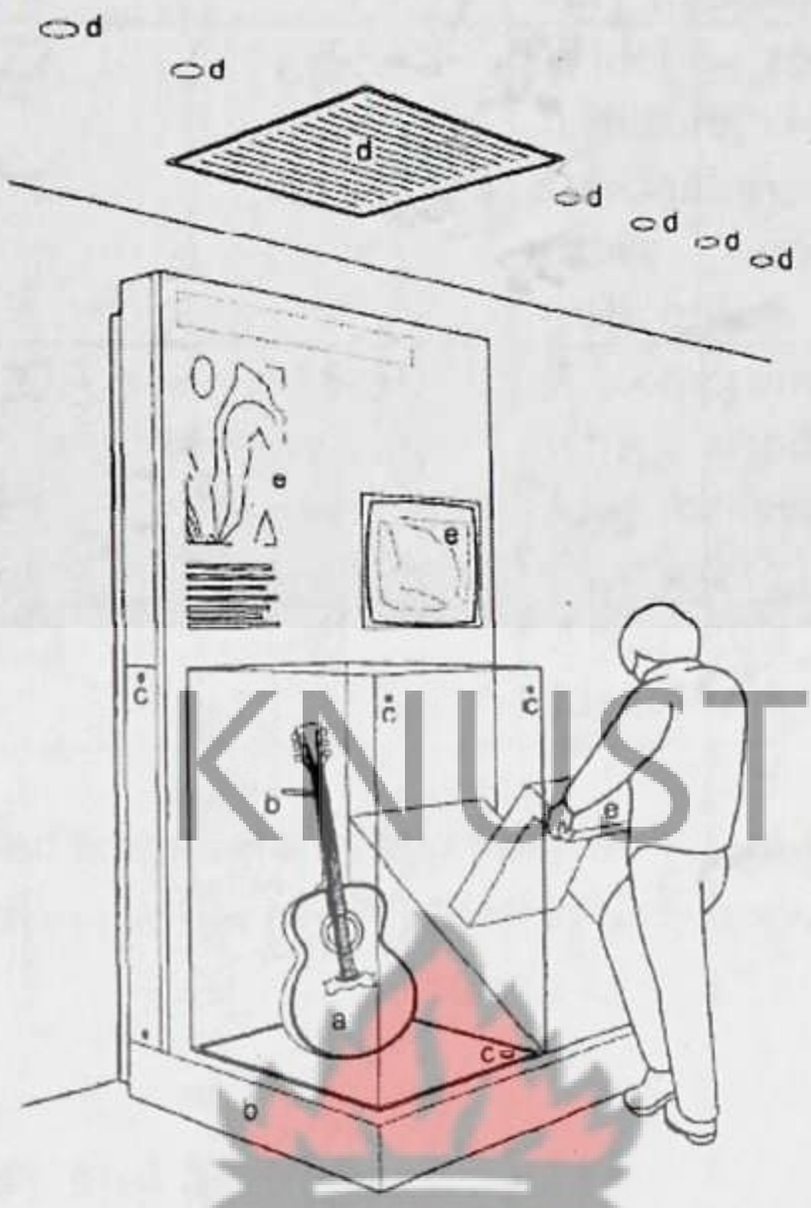

Fig. 4.68: Figure showing the utilisation of media tools

Source: Adler (1999) Metric Handbook

iv. Museum Internal Climate: Temperature Requirements and Climate Conditioning

The main goal for internal climate conditioning of galleries/ exhibition spaces should be to maintain humidity levels and air temperatures as constant as possible over the long term period with a minimum of mechanical climate modifiers. Special considerations should be given to such areas as exhibition space, collection storage room, conservation chambers, as well as preservation and photographic work areas. In the case of climatic extremes, such as moisture-prone areas full internal climate conditioning and the building envelope must also provide a sufficient buffering effect to prevent sudden changes in relative humidity during periods of repair or maintenance (Adler, 1999). Table 4.8 indicates the ranges of museum interior temperature and relative humidity recommended in various climatic zones.

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Climate	Temp (°C)	RH (%)	Notes
Humid tropics	20-22	65	Acceptable for mixed collections. However, RH too high for iron and chloride-containing bronze. Air-condition very important
Temperate coastal and other non-arid regions	20-22	55	Widely recommended for paintings, furniture, wooden sculpture in Europe, satisfactory for mixed collections. May cause condensation and frosting difficulties.
Temperate inland regions	20-22	45-50	A compromise for mixed collections and where condensation may be a problem. May be best level for textiles and paper exposed to light.
Arid regions	20-22	40-45	Acceptable for display of local material. Ideal for metal-only collections.

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Table 4.8: Recommended temperatures and relative humidities in climatic zones
Source: Adler (1999) Metric Handbook

v. Museum Collection: Security and Services

Zoning: Primary security is ensured at public accesses into the museum building. All initial public services must be separated from any access into the main gallery spaces. The health and safety of the public and the staff and collection security are the prime considerations in determining the zoning of the museum into secure areas (Adler, 1999). During open hours it may be sufficient to separate public and staff areas. When the museum is closed to the public it is normal to secure more specific zones.

Built-in Security Technology: Security systems for museum collections and artefacts cover four (4) main areas:

- Hold-up alarms and Burglar Detection Systems: spatial location, sizes/area coverage, installations
- fire detection systems, video surveillance systems and access control system.

CHAPTER FIVE

DESIGN PROPOSAL AND RECOMMENDATIONS

5.1 INTRODUCTION

The extent of studies on the issue of museum interactions and the manner in which they influence the visitors' museum experience have been to confirm the existence of a socio-spatial awareness which can be conceptualised into a design model and visualised in the proposal for a National Museum of Arts and Culture. This section outlines the proposal for a National Museum of Arts and Culture using a socio-spatial design concept.

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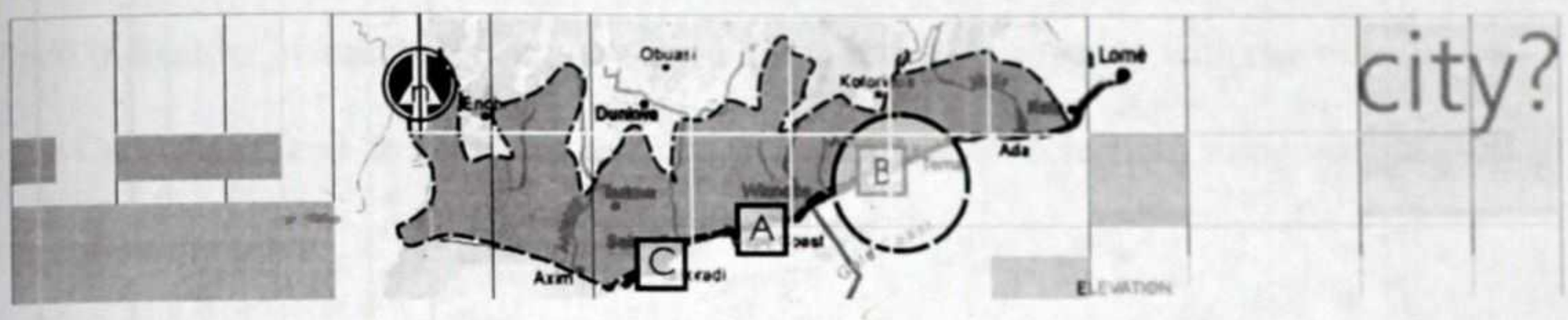
5.2 SITE STUDIES

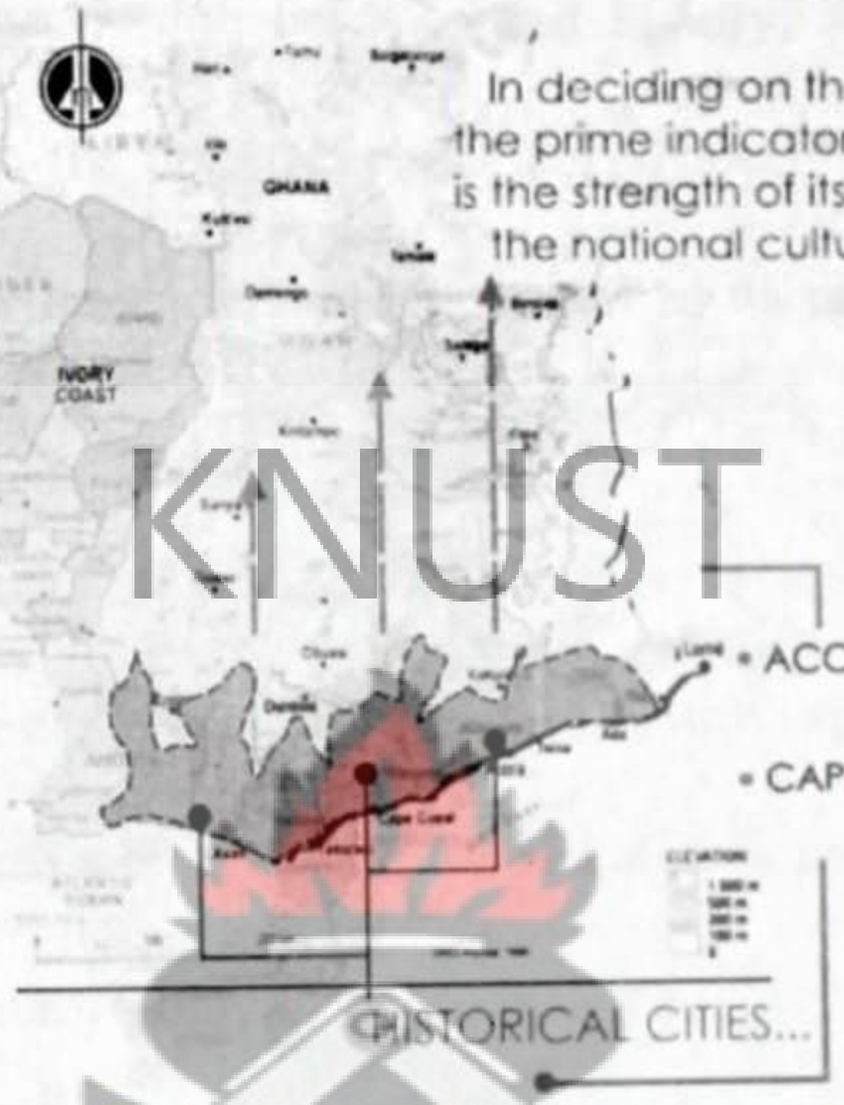
Site selections were done on macro, medium and micro-levels of urban scale (Schaick, 2005).

i. SITE SELECTION: (MACRO-LEVEL)

Selection of a site needed to justify the concept of '**multi-accessibility**' for all targeted patrons (Local, 'African and Black Diaspora' and Foreign visitors). The selection process took into account the most suitable location the project. In consideration, the prime indicators of suitability were identified as:

- the extent of the location's physical, cultural and historic connection and access to Ghanaian history and heritage resources.
- suitable access to location by all target users.
- the economic potential of site and context to become a model for cultural tourism.
- a level of connection to the existing National Museum of Ghana to ensure coherence, continuity and urban linkage.





site significance

In deciding on the aspect of site location, the prime indicator of appropriateness is the strength of its connection to the national cultural heritage. HISTORY

- ACCRA ✓
- CAPE COAST ✓

- Since its very beginning, our history has always had an enduring connection to waterbodies...

In total, 60 forts lie along Ghana's 300-mile stretch of coast

HISTORICAL VALIDATION...

1.ACCRA

16th century

Oral traditions of the Ga, Adangme and Ewe peoples recall an emigration from the east.The Ga (Kpesi) & Adangme founded a small village on the west side of the Korle Lagoon, where they traded with "passing Portuguese ships (Briggs, 2001)

17th century

The European forts were built in the middle of the 17th Century. The forts of Accra were used as places for holding slaves and the storage of merchandise. (Grant and Yankson, 2002)

19th century

1862: an earthquake destroyed major parts of Accra, including the castle & several forts, making it necessary for spatial reconfiguration.

1877: Accra became the capital city of Ghana, and grew from a fishing community to an heterogenous business centre. (Amponsah,2002)

2. CAPE COAST

15th century — 16th century | 17th centur

The founding of the Cape Coast by the Portuguese, the name Cape Coast comes from the word cabo corso 'short cape', who came to trade with the Fetu people; and the development of the Cape Coast Castle

1637:
Conversion into a castle by the Dut

1652:
Expansion by the Swedes

Fig. 5.1 Macro-Analysis of site
Source: Author

Accra was selected as the optimum location for the project since it addressed most of the outlined indicators of suitability. It was selected in a comparative study with two other cities, namely Cape Coast and Takoradi. In addressing the criteria for selection, siting was justified by the following points:

- Regarding the site's connection to heritage and history, Accra's historical role in national development as the capital city, its physical role during the era of colonisation and the slave trade movement as well as its physical connection to the resource of water - a significant historical resource due to its connection with the slave trade and colonial era - support its qualification as a site. Accra as a model for waterfront diversification and development - to possibly include cultural centres for public enjoyment would see a progressive use of a significant heritage resource.
- Accra's position as the main point of entry into the country (by land, sea and air) meets the requirement of suitable access.
- Accra function as the national capital; in this position, (and with the advent of a stable political capital), it is strategically poised for economic growth and burgeons with economic potential. A museum development would be a powerful reflection on **strength of civic and cultural character** of the city and an indicator of burgeoning economic growth.
- Accra is the site for the existing National Museum of Ghana as well as several other museum and galleries. The ease of public linkage in this respect qualifies Accra as an optimum site for the project.

Figure 5.2 is a visual summary presenting the various points for justifying Accra's qualification as the site for the proposed National Museum development.

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Fig. 5.2 Justification of Accra as selected city

Source: Author

ii. SITE SELECTION: (MEDIUM-LEVEL)

The **'Accra Central'** and **Adabraka** sectors were identified as prime areas for the site for the museum development. Both areas currently function as strong civic sectors and contain a varied number civic aspects, such as banking sectors, religious landmarks, government ministries, public community and cultural centres. The 'Accra Central' sector functions as a

waterfront on its southern edge and therefore enjoys an established connectivity (physically and culturally), in addition to a strong civic context to justify the placement of the museum. A waterfront site was desired because of the significant amount of history that is traced to the coastal waterfronts of Ghana. The current public image of waterfronts promotes accessibility to a very small fraction of the public (the extremes of the high and low class social groups). Diversification into such areas as **'cultural'** waterfront developments would help to open the waterfront to a multitude of public users and re-energise that particular community.

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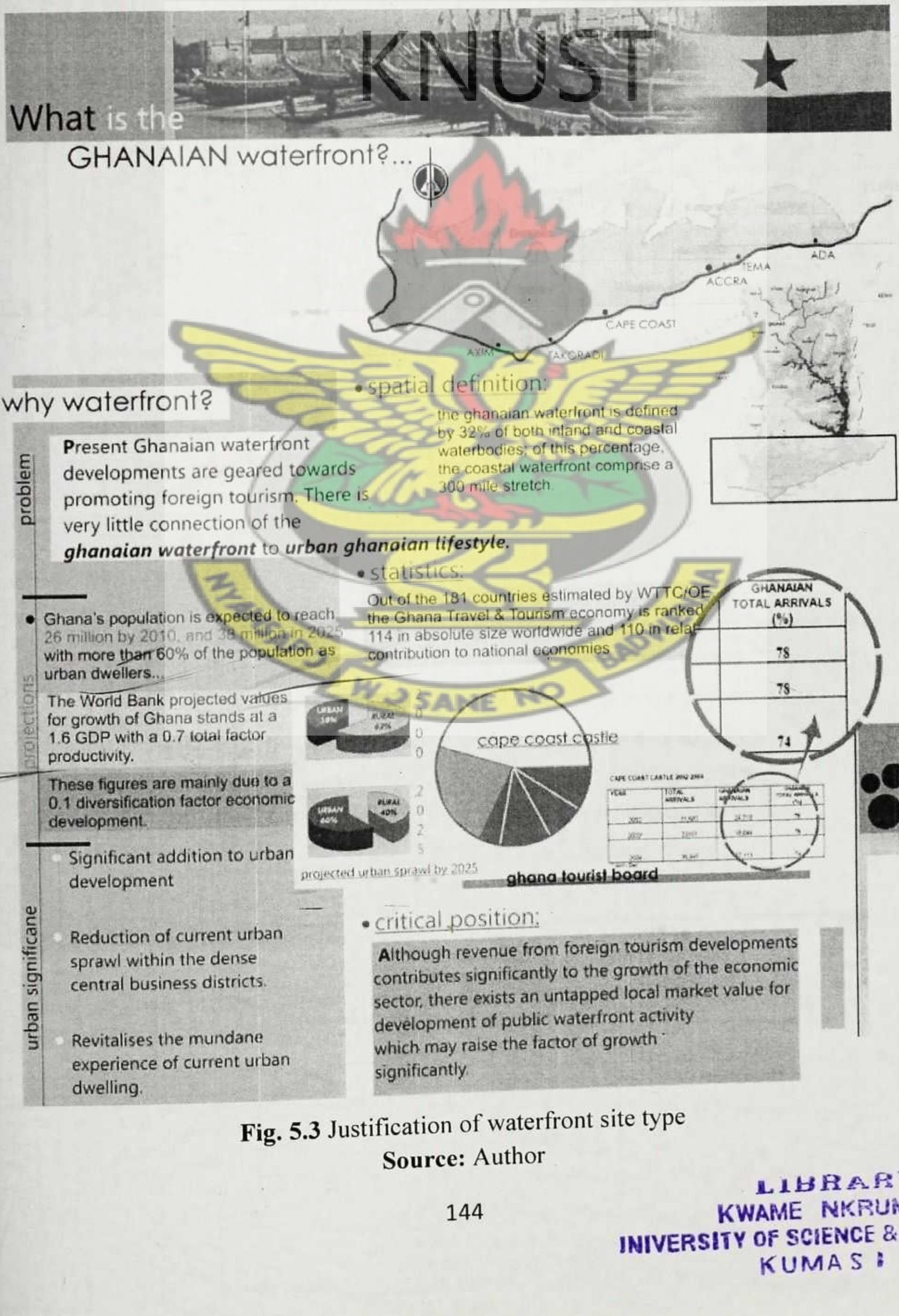

Fig. 5.3 Justification of waterfront site type

Source: Author

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iii. RECONNAISSANCE STUDY:

The map below in figure 5.4 presents an outline of key landmarks found within the sector. Within Accra Central, the main notable **civic landmarks** include the Kwame Nkrumah Memorial Park, Centre for National Culture and the public community centre (see figure 5.5).

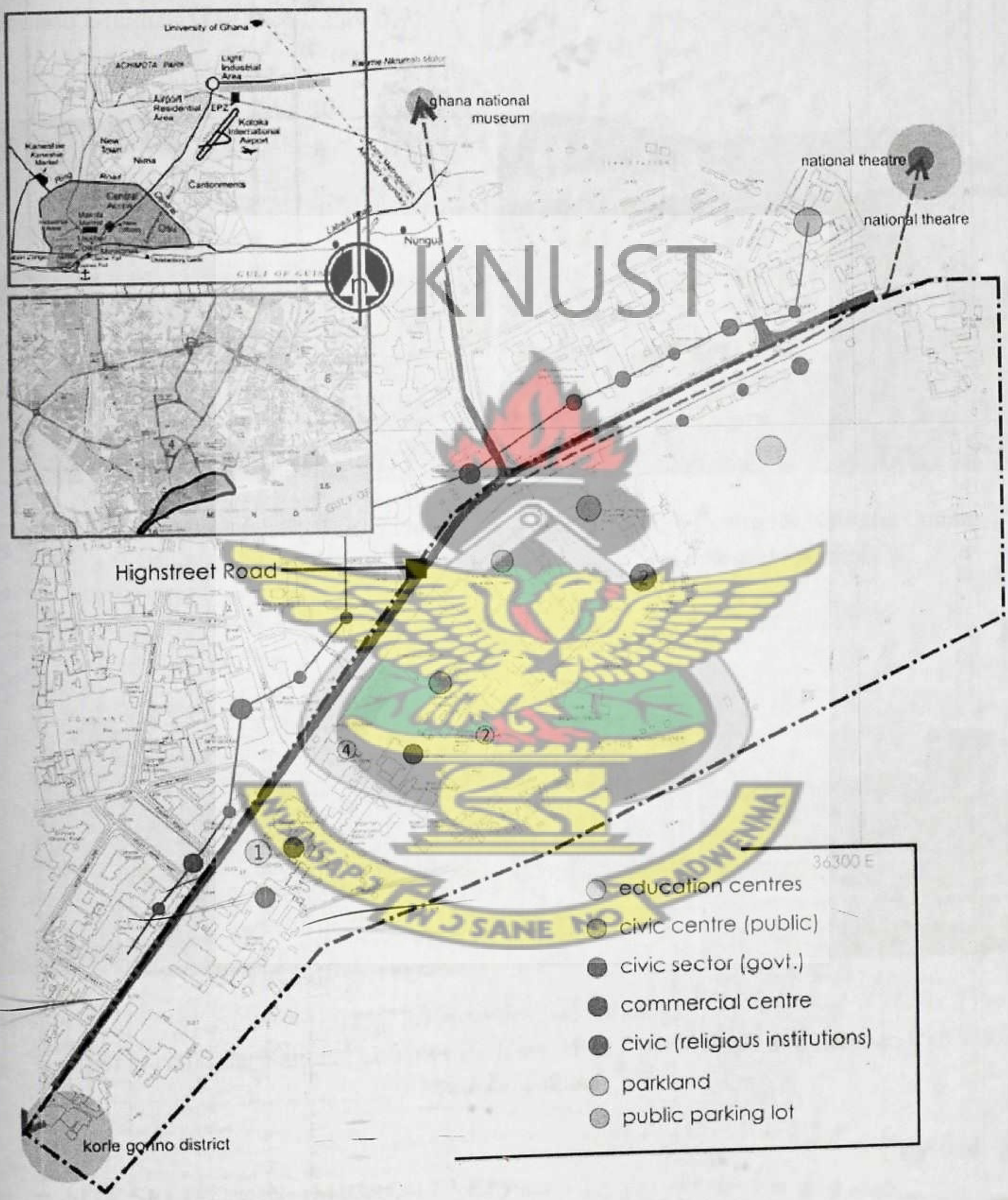

Figure 5.4: Location Map of Accra Central outlining key landmarks
Source: Author

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Notable **commercial centres** included the Makola Market and the Arts Centre; religious landmarks included the Holy Trinity Church, educational landmarks included the Holy Trinity Secondary School and the Ghana School of Law. Other notable civic landmarks included the Old Parliament House, the Supreme Court of Law, the Fortune House, High Court and Brennan Hall (see figure 5.7).

Fig. 5.5 Kwame Nkrumah Memorial Park
Source: Author

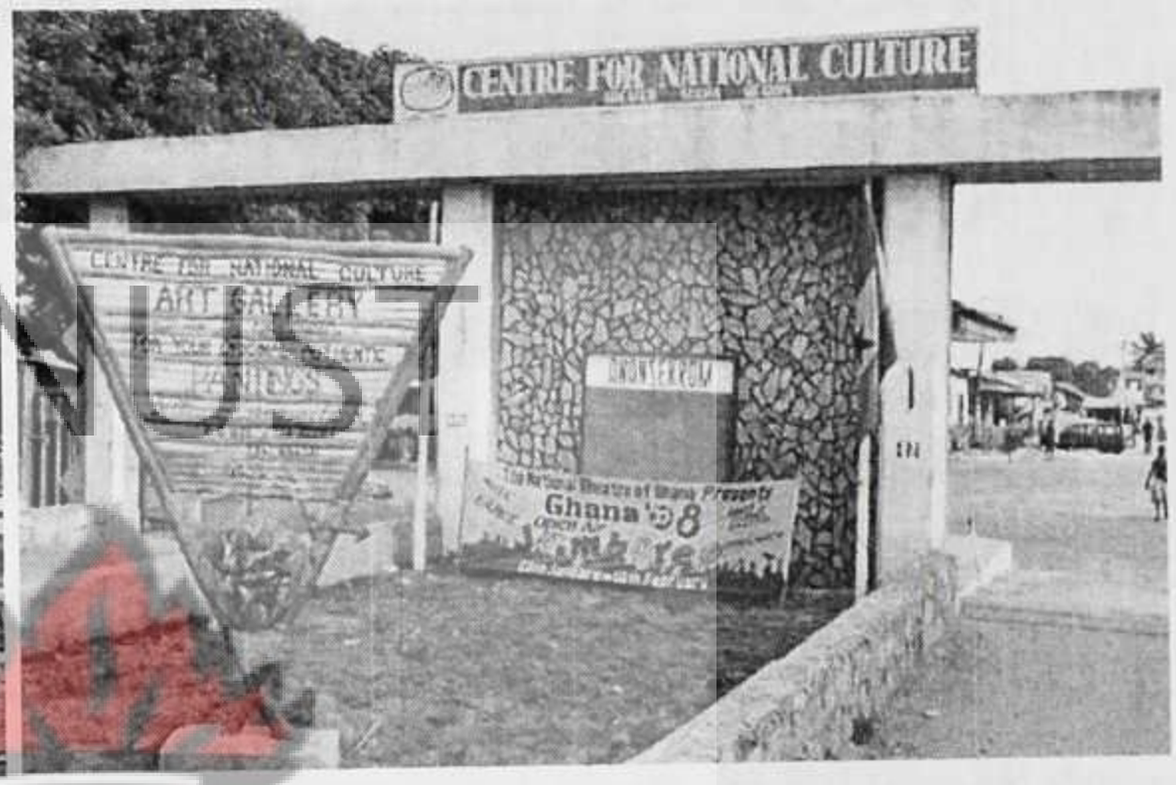

Fig. 5.6 The Centre for National Culture
Source: Author

Fig. 5.7 Notable civic buildings
(left to right: the National Lotteries Building, High Court of Law and Brennan Hall
Source: authour

iv. SITE SELECTION: (MICRO-LEVEL)

On a more specific level of site selection and location, the following criteria were considered the most important factors to consider for development of the museum:

LOCATION: The site must have a potential to ensure the sustainability of the development by possessing opportunities for expansion and growth. The site must be able to cater to all aspects of the design brief in terms of:

- **compatibility with surrounding context:** the site must connect and relate to the nature of surrounding context. Selection must also take into account the location of the site within a suitable context capable of providing views of significant contextual value.

- **level of urban development of site:** the extent of urban development and composition must be considered since the nature of the site location may increase cost of works and provision of accesses; this would contribute to either detract or add value to the design.

- **physical site characteristics and land form:** the selection must consider the presence of existing geographical characteristics. Proper site drainage and moisture protection must be assured. The site must have protection against flood lines typical of waterfront locations. Extreme site gradients and landforms would only contribute adversely to the design cost of ensuring the building's moisture protection. The site must be elevated enough from the sea level to provide views of its surrounding context.

- **contribution to contextual development:** The museum should be located within a site that enable it to contribute to the overall coherence and development of the macro-zone.

SIZE: The site area must be able to support the outlined brief and accommodation schedule as well as ensure future expansion opportunities and growth of the museum.

ACCESS: The site must be located around an **effective transportation network** which can integrate vehicular, cycle and pedestrian movements. There must be an appreciable ease of **accesses for both public and service functions** into the site. The site must also be located close to an **existing public parking facility** which can cater to excess populations. This is to

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enable the site afford pedestrian priority, and plan out free, 'walkable' environments for museum visitors. The pedestrian nature of accesses reduces vehicular dependency and environmental pollution whiles promoting greater public interaction on and around the site. Two sites were selected as suitable options for the location of the museum. Figure 5.8 shows the location and layout of the two options for site.

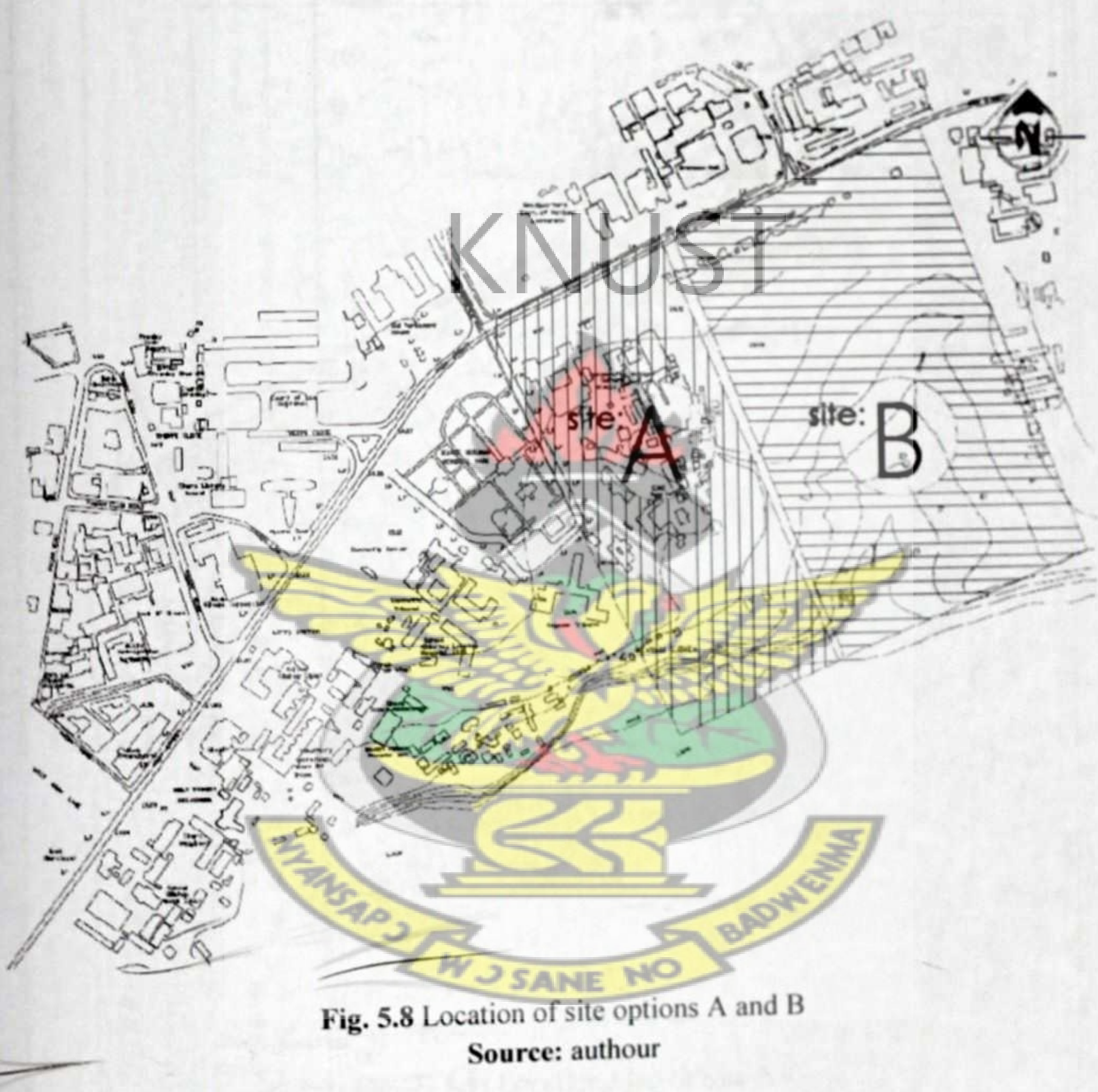

Fig. 5.8 Location of site options A and B

Source: authour

Site A is the current site for the Centre for National Culture, bounded by the main High Street Road on the north end, the Kwame Nkrumah Mausoleum on the west end, an open playing field (currently serves as a football pitch) on the east end, and by the coastline of the Gulf of Guinea on the south end.

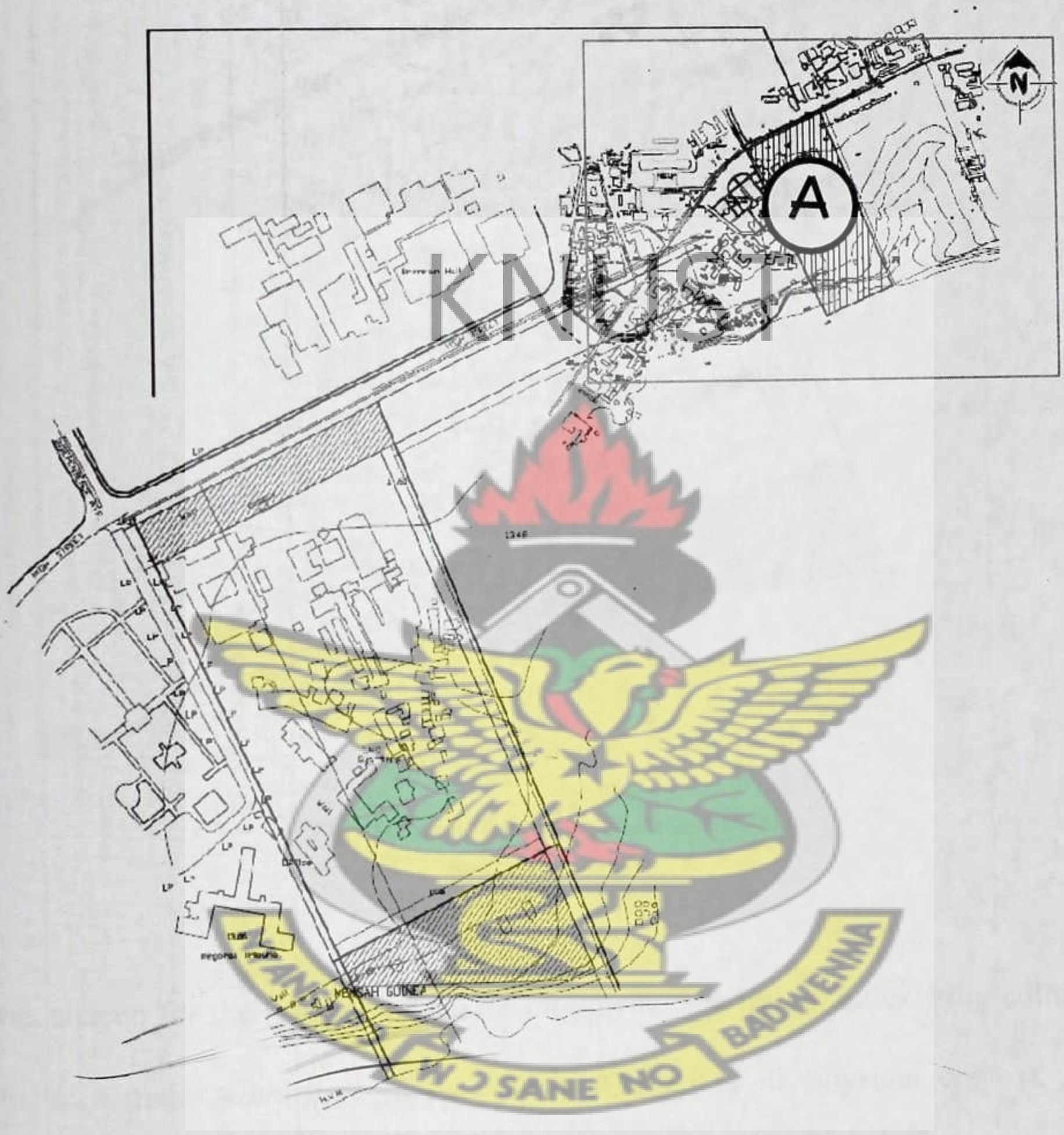

Figure 5.9: Location Map of Site A
Source: Author

Site B is an open playfield, bounded by a chain of art workshops and storage units as well as the main High Street Road on the north end, the Centre for National Culture and its environs on the west end, residential squatters and small scale commercial chains on the east end, and by the coastline of the Gulf of Guinea on the south end.

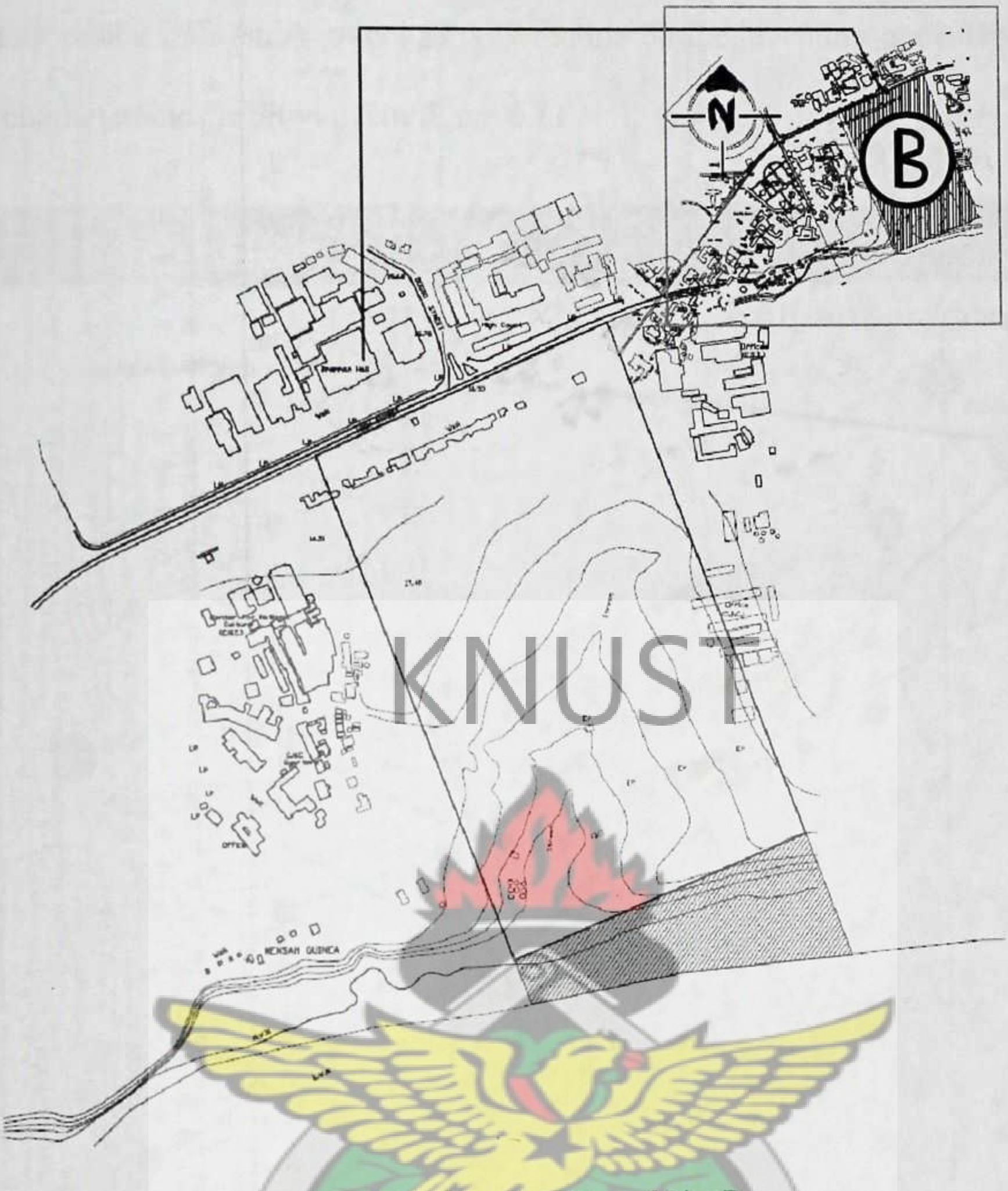

Figure 5.10: Location Map of Site B
Source: Author

Site A was chosen for the location of the development. The link to an existing cultural centre proved to be a major advantage of the site in relating to its physical context. A line of progression is drawn that links the various cultural centres in succession; the location of the site strongly suggests that it would play a key role in the completion of a cultural quandrangle that links three significant cultural buildings - the Ghana National Museum, the Ghana National Theatre, the Kwame Nkrumah Mausoleum and the Centre for National Culture. Proposing a National Museum of Arts and Culture within that site creates a relationship that links the existing cultural influences within that sector positions the Museum at the end of that link as the culmination of cultural forces. It would serve to re-energise the precinct and

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draw in greater public interest. A graphical presentation on the inventory and analysis of the various site characteristics is provided in figure 5.11.

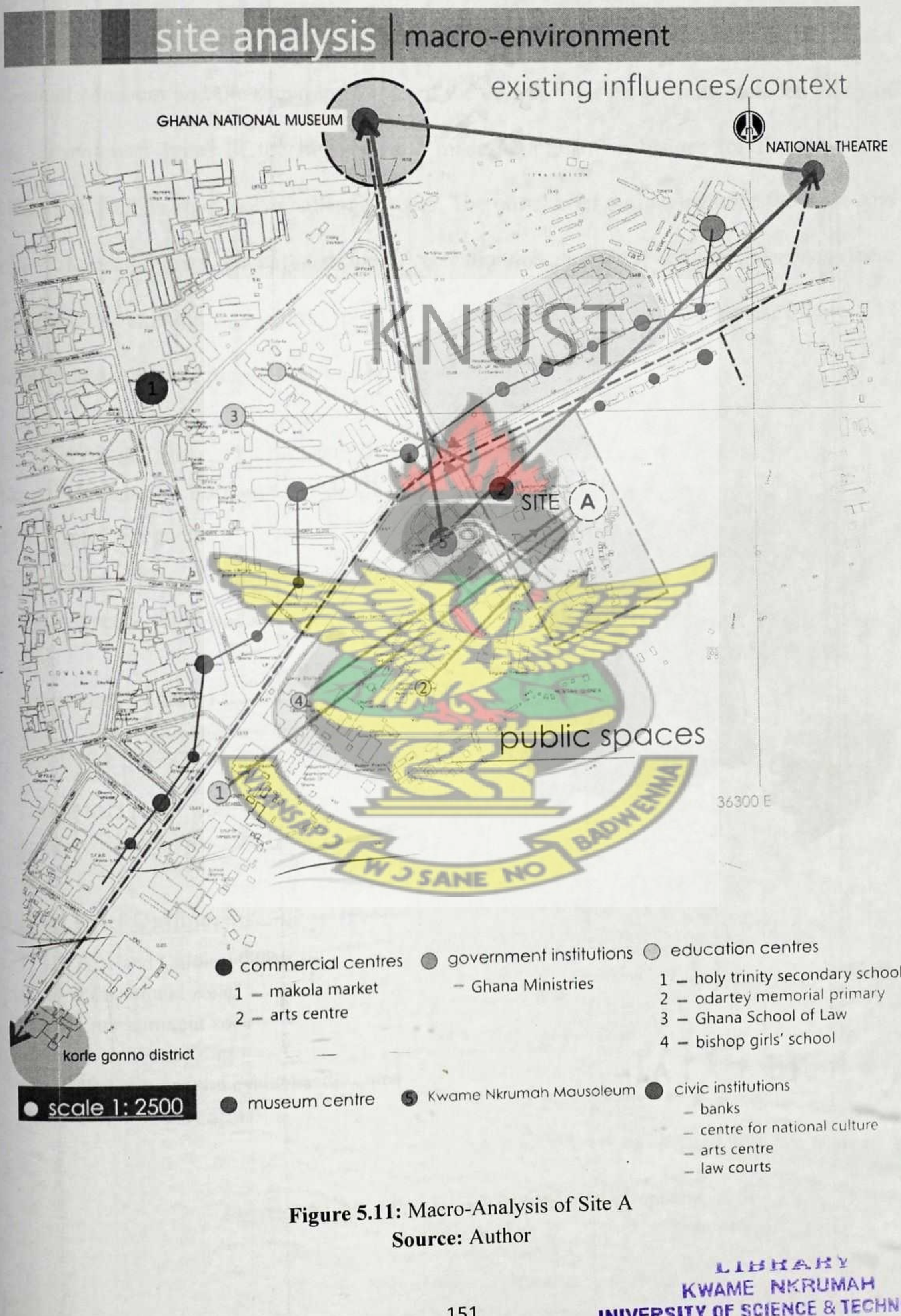

Figure 5.11: Macro-Analysis of Site A
Source: Author

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5.3 BRIEF AND PROGRAMME DEVELOPMENT

i. VISITOR TYPE AND POPULATION ANALYSIS

The user programme was developed in relation with the findings from the study on the Ghana National Museum and the social intentions of the design. User programme included many of the current user types of the musuem and made significant inclusions for first-time/non-visitors as well as physically challenged users. The initial brief outline included the main Arts and Cultural galleries, educational zones, recreation/leisure zones, commercial zones (these integrate the existing arts centre), play areas (for children) and parking zones. Figure 5.12 encapsulates the user programme and brief outline.

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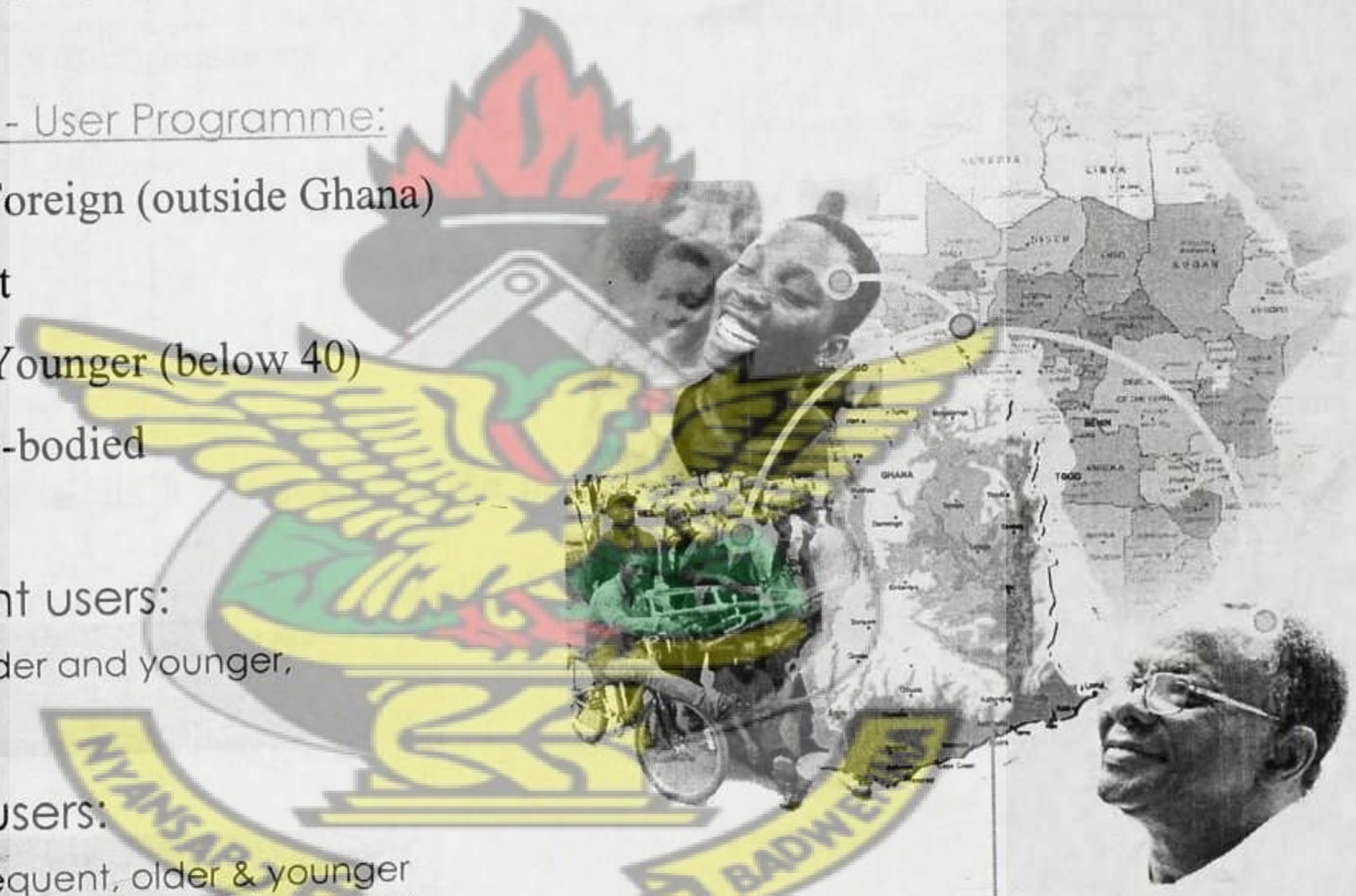

Figure 5.12: User Programme and Brief Development
Source: Author

The targeted number of visitors is estimated at 250 persons daily. The number accounts for all single visitors and group visitors of a maximum of 6 individuals (characteristic of family types). The targeted number group visitors with numbers above 6 individuals was 25 groups per day. The total number of tour sessions daily are listed in table 5.1 below. The multi-purpose hall was designed for a seating capacity of 800 persons. Educational lecture rooms targeted an maximum accommodation of 80 persons per room.

TYPE OF TOUR SESSIONS	Frequency
Morning Sessions	4
Early Afternoon Sessions	2
Late Afternoon Sessions	2

Table 5.1 Total number of tour sessions daily
Source: Author

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The following observations were made within the discussion of socio-spatiality as a design guideline in the formulating the detailed brief.

- A social approach to design of gallery spaces must include aspects of private and public partieipation.
- The design of multi-accessible and multifunctional spaces within museums allow for high levels of participation and a wide range of experiences - spaces such as interactive media galleries, discussion rooms, workshops and craft spaces can all be integrated with the actual showcase environment.
- Design of museum programme structure by museum officials which takes into consideration visitor responses to use of space, interaction with exhibits and circulation patterns.

- Creation of social break or rest spots (such as seating areas or relaxation lounges) within museum tour to ensure lesser periods of visitor fatigue.
- Constant recreation of museum exhibitions messages to maintain high interest of visitors.

Tables 5.2 and 5.3 outline the developed brief and accommodation schedule.

ii. DETAILED BRIEF

Main Sectors	Sub-Spaces
1. Exhibition Sector (outdoor section)	entrance court, public events, pavilion grounds, sculpture garden pavilion, crafts court, memorial court
2. Exhibition Sector (indoor section)	entry foyer, orientation space admission/ information point, holding area, galleries: interactive gallery, arts, culture, history galleries), atrium, washrooms
3. Leisure/ Commercial Sector	museum art/ painting shops, souvenir store, bookstore, eatery section (food court, café restaurant, chop-bars), water-park, play area
4. Entertainment Sector	multi-purpose hall (main hall, upper balconies, control room, stage area, projection room, orchestra pit, sub-stage area, backstage, storage room, washrooms), amphitheatre, performing arts grounds
5. Educational Sector	lecture rooms (audio-visual), mediatech centre, child workshop, music & dance room study room (artefacts), research section
6. Administrative Sector	reception foyer, public relations offices, conference rooms, press room, archives chamber, offices (managerial, curatorial, departmental, other staff), staff cafeteria washrooms

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7. Technical Sector	**research wing:** research laboratories, preservation room, storage room, offices, washrooms (male, female) **conservation wing:** quality assessment area, clean chamber, photography room, dark room, storage rooms (textiles, paintings, papers, iron/steel artefacts, organic materials)
8. Service Sector	ATM section, kitchen facilities
9. Maintenance Sector	workshop section, general storeroom, generator plant room, water plant room, utility rooms, worker's unit (offices, shower rooms, cafeteria), first aid centre
10. Security Sector	control office, offloading bays, holding room, inspection rooms, primary storage room, vaults/strong room
11. Parking Sector	vehicular: (public, administrative staff, service staff, services,), cycle parking

Table 5.2 Detailed Design Brief
Source: Author

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iii. ACCOMMODATION SCHEDULE

EXHIBITION SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Entry Foyer	information/tickets point	1	25
	orientation space	1	350
	inspection point (holding area)	1	15
Entrance Atrium			
Galleries	temporary exhibits	1	500
	history gallery	2	1500
	arts gallery	2	1000
	culture gallery	1	1500
Public Washrooms	female	5	15
	male	3	10
	disabled	3	15
total area			4930

COMMERCIAL/ LEISURE SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Museum Crafts Shop		1	200
Painting Shop		1	100
Souvenir Store		1	100
Bookstore		1	200
Eatery Section (food court)	café		
	restaurant	1	600
	chopbar	1	300
	buffet & bar	1	80
Children Playarea (Water Park)			225
total area			1805

ENTERTAINMENT SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Multi-purpose Hall	main hall	1	400
	upper balconies	2 wings	150
	control room	1	35
	stage area	1	200
	projection room	1	25
	orchestra pit	1	100
	backstage	1	300
	storage room	1	100
Amphitheatre / (Performing Arts Grounds)		1	600
Public Washrooms	female	5	15
	male	3	10
	disabled	3	15
total area			1950

EDUCATIONAL SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Lecture Rooms		4	600
Mediatech Centre		1	150
Child Workshop		1	150
Music Room		1	150
Study Room		3	225
Research Room		1	150
total area			1425

SECURITY SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Control Room		1	80
Holding Room		1	500
Inspection Rooms		3	240
Primary Storage		1	200
Vault/ Strong Room		4	100
Security Posts		3	15
total area			1135

ADMINISTRATIVE SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Reception Foyer		1	80
Public Relations Pt.		1	25
Conference Room		2	200
Press Room		1	120
Archives		1	100
Offices	managerial	1	100
	curatorial	1	80
	departmental	5	250
	other staff	4	100
Washrooms	female	5	15
	male	3	10
	disabled	3	15
total area			1095

MAINTENANCE SECTOR

ZONAL BRIEF	SUB-SPACES	NO.	AREA (sq.m)
Workshop Section (offsite)		1	500
General Storeroom		1	225
Power Plant Room		1	100
Water Plant Room		1	400
Utility Rooms		4	100
Workers' Unit	cafeteria	1	200
	changing rooms	2	150
	washrooms	2	80
First Aid Centre		1	100
total area			1355

Table 5.3 Detailed Accommodation Schedule
Source: Author

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5.4 DESIGN PROCESS

i. CONCEPTUAL SITE PLANNING

Zoning: The site was zoned into 3 main zones according to the main programmes detailed in the design brief from high activity concentrations to low activity concentrations. Circulation was detailed for both public and service parking requirements. The main access into site was taken from the northern point on site and was pulled through into the site. Gallery activities were sited within zone B and all leisure entertainment activities fell within zone C. Zone A accommodated all public welcome activities and facilities.

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Figure 5.13: Site Planning - Process
Source: Author

ii. FORM DEVELOPMENT

The development of the form centred around creating a museum space that strongly reflected the the concept of interaction. The resulting programme of figure 5.14 reveals the linkages of the various galleries to one another. In terms of scale, the museum was envisioned to encompass aspects of arts and culture; these translated into the arts, ethnographic and history galleries. In

terms of levels, the museum was conceived on 3 levels connected by means of circulation systems.

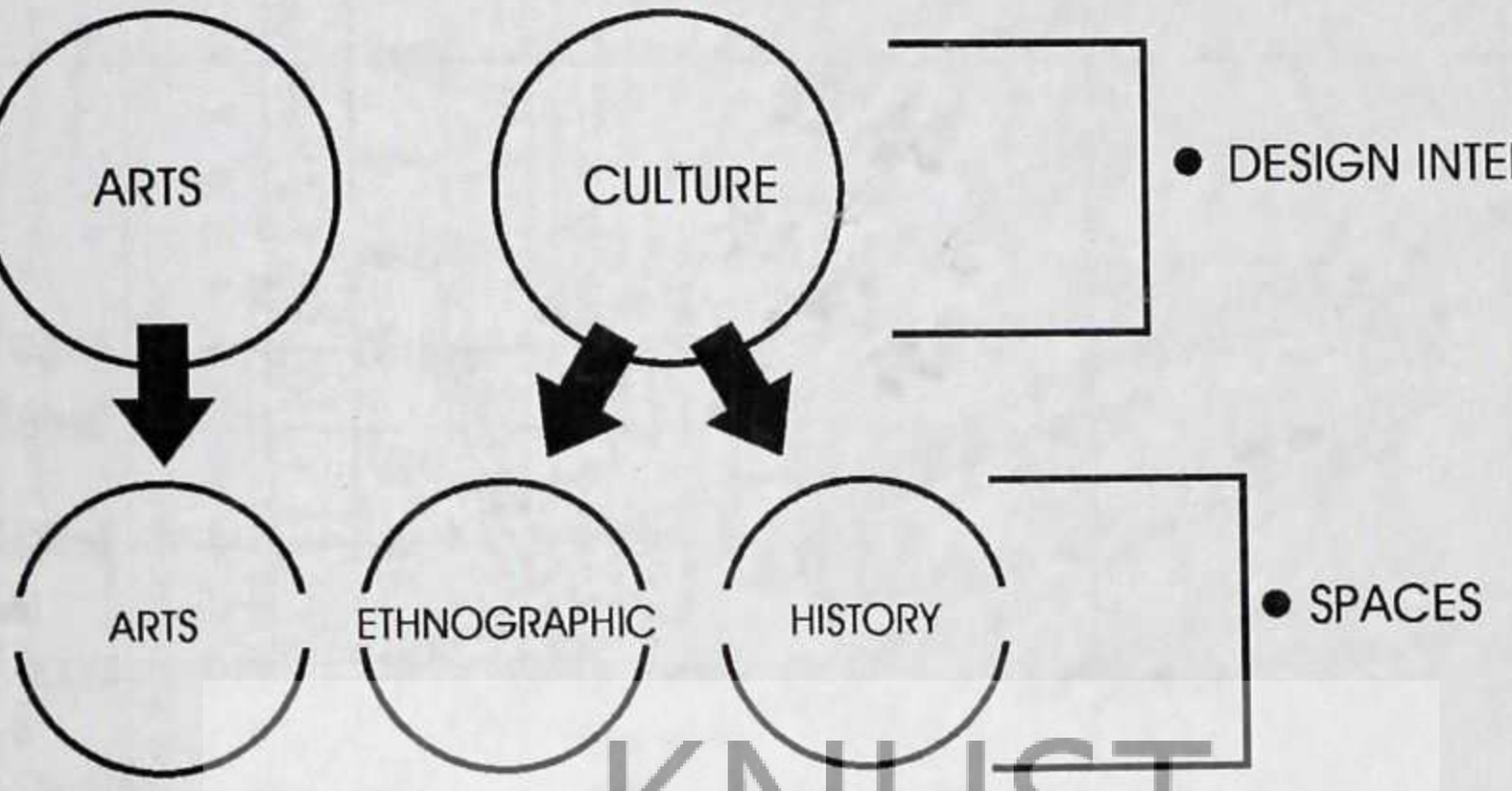

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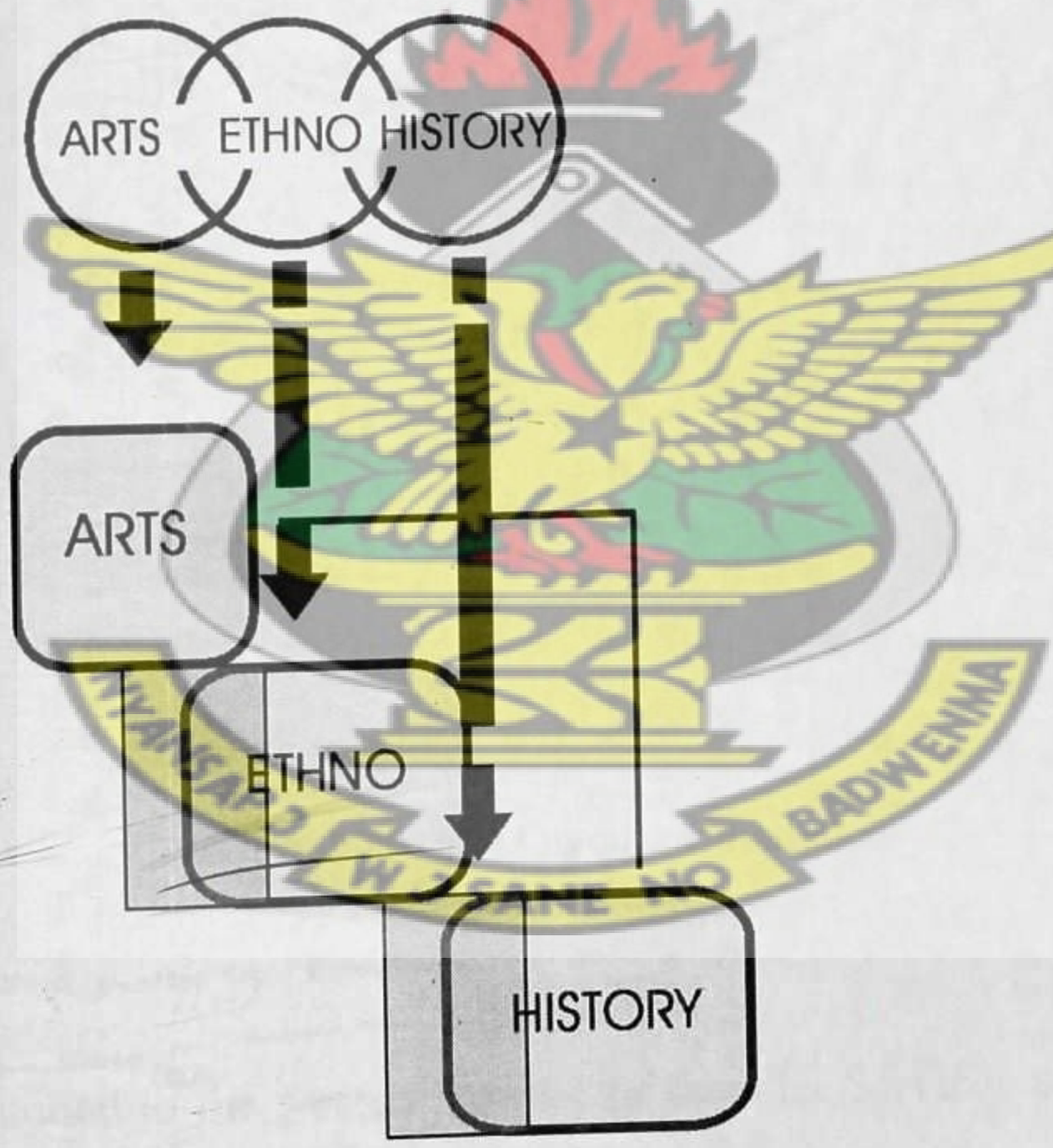
Figure 5.14: Programme Development for main Galleries
Source: Author



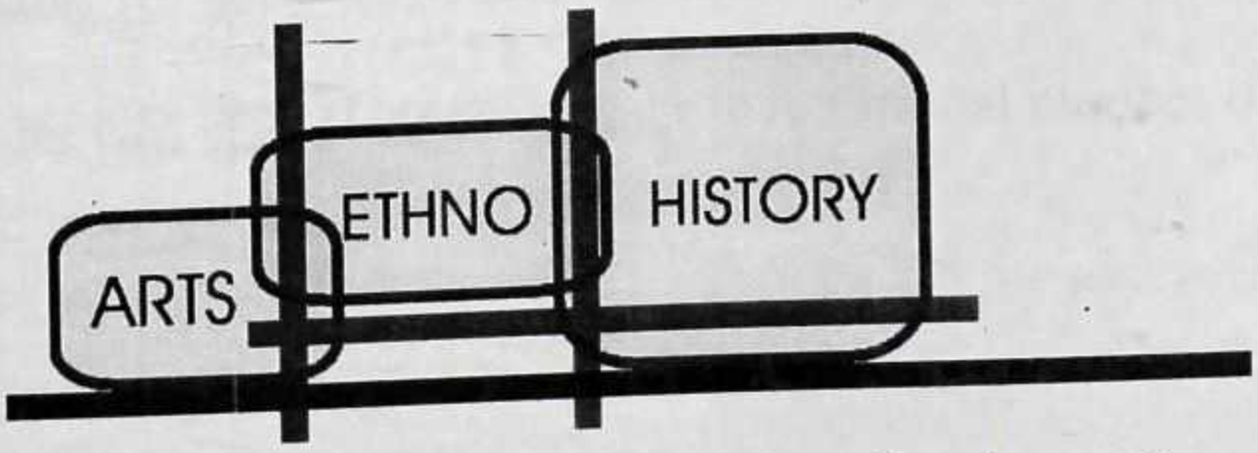


Figure 5.15: Conceptual Form Development
Source: Author

5.5 DESIGN VISUALISATION

i. LAYOUT A: SITE CIRCULATION AND ACCESSES

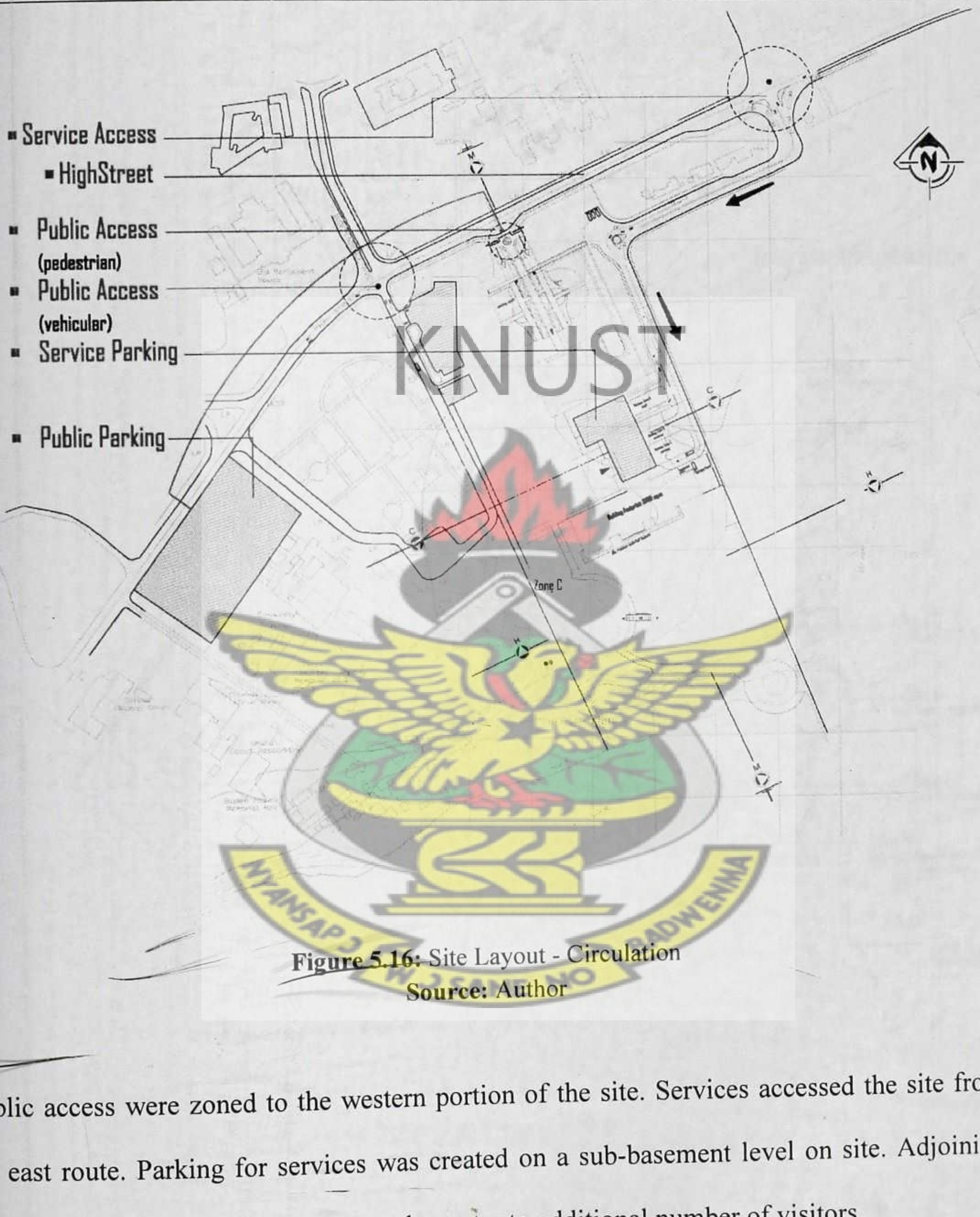


Figure 5.16: Site Layout - Circulation
Source: Author

Public access were zoned to the western portion of the site. Services accessed the site from the east route. Parking for services was created on a sub-basement level on site. Adjoining public parking off-site was also planned to cater to additional number of visitors.

ii. LAYOUT B: SITE PLAN

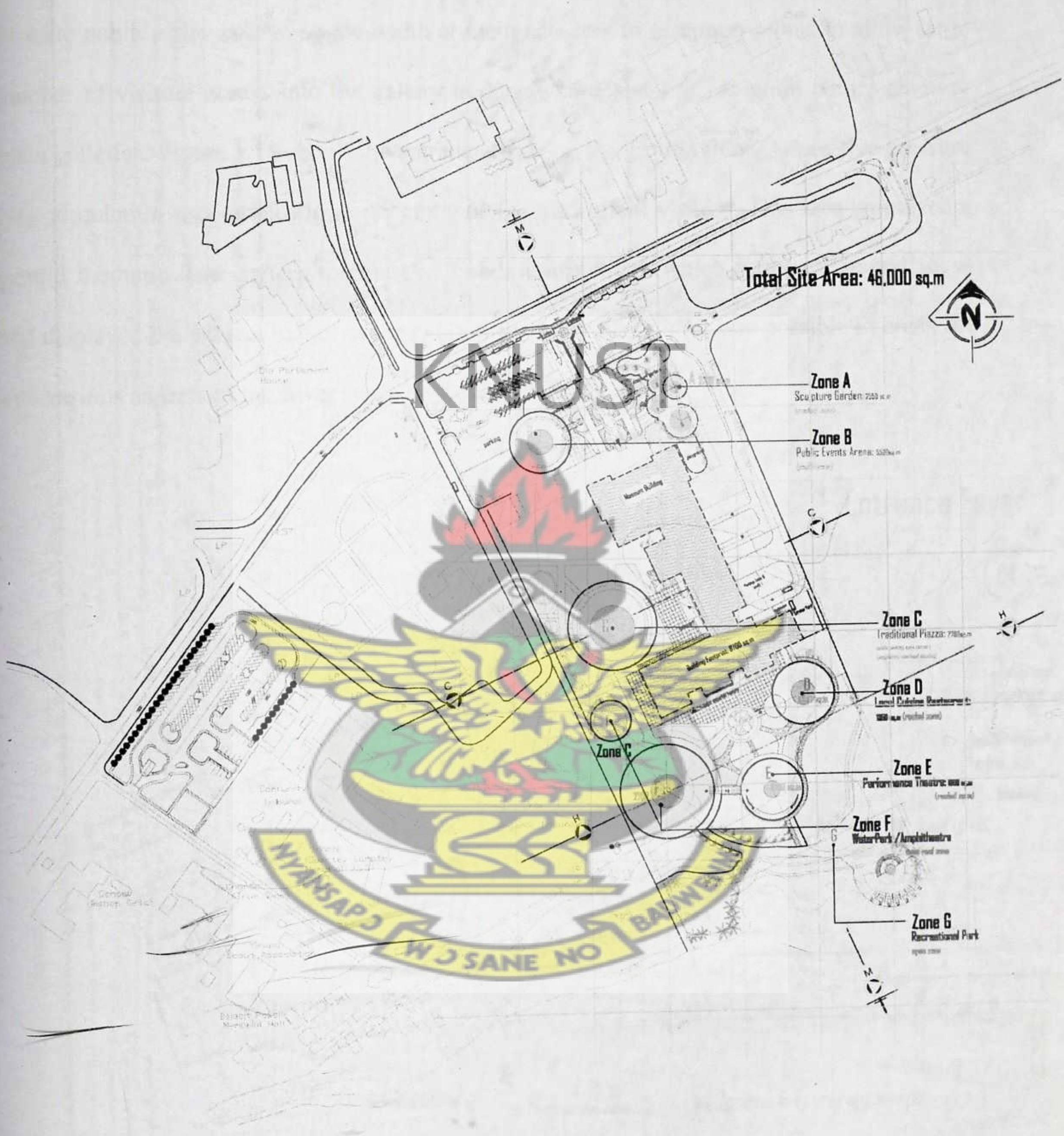


Figure 5.17: Site Plan - Spatial Integration
Source: Author

iii. GALLERIES - GROUND FLOOR

Access and Accessibility: The design utilised the socio-spatial model and employed the use of wide public entry points, ample width at main accesses to reception points to allow large number of visitors access into the gallery, reducing time spent at reception before entering main galleries. Figure 5.18 shows the entrance foyer on the ground floor. A 'positive pressure ring' circulation was employed in the entrance foyer to orient visitors. This area employed a central thematic flow pattern to create an exhibition podium, which formed a central focus and displayed the subject matter of the exhibition. From this point it was possible to break off into various aspects of the foyer space or proceed with the tour.

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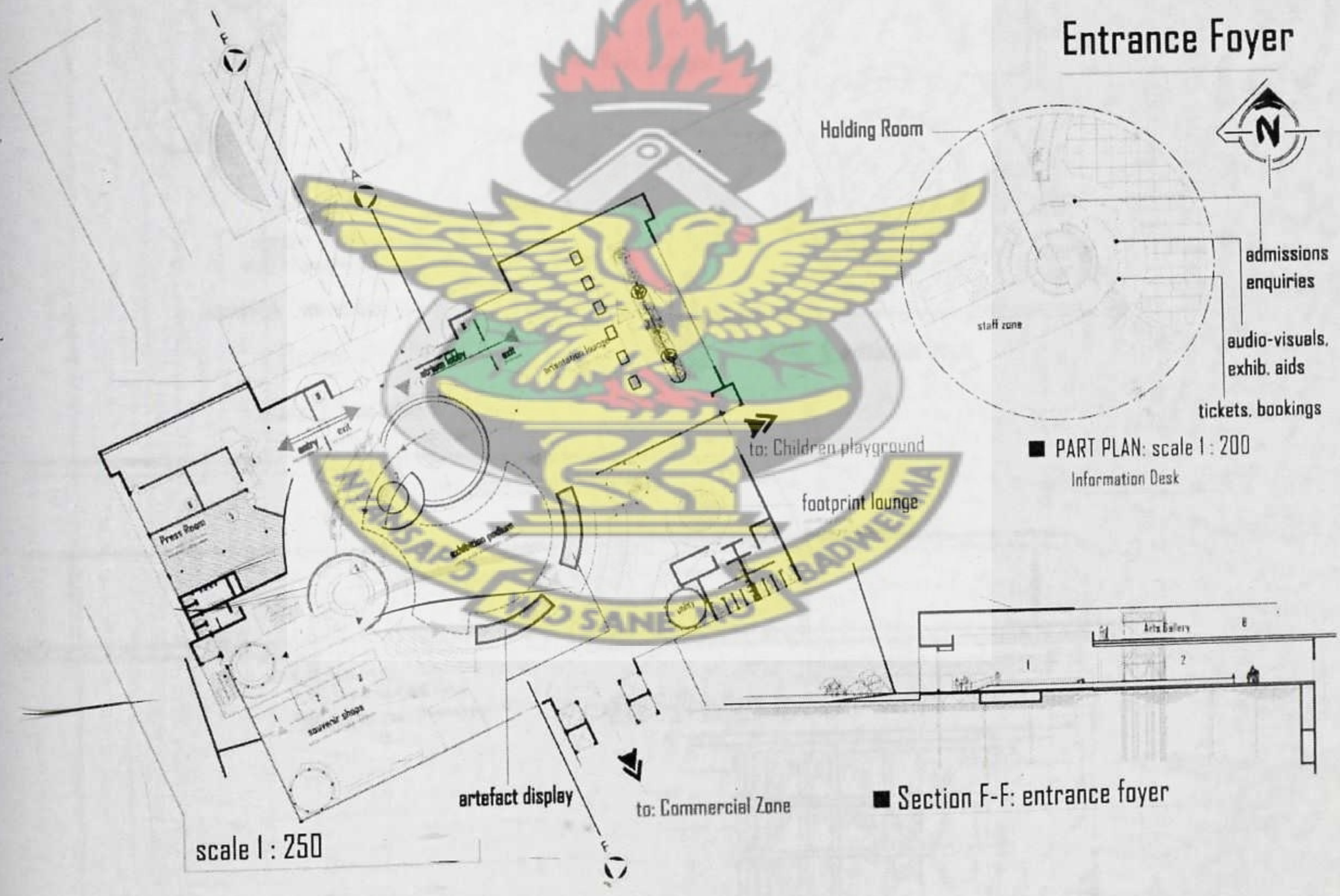

Figure 5.18: Entrance Foyer - Ground Floor
Source: Author

iv. GALLERIES: ETHNOGRAPHIC GALLERY (FIRST FLOOR)

The ethnographic gallery also utilised the radial flow pattern with a thematic core to create focal centrepieces with incorporated seating which looked both to the exhibits and the central piece. These centrepieces were placed within designed 'cultural canes' that functioned both as a focal display case and a main structural system for the entire museum space (figure 5.19).

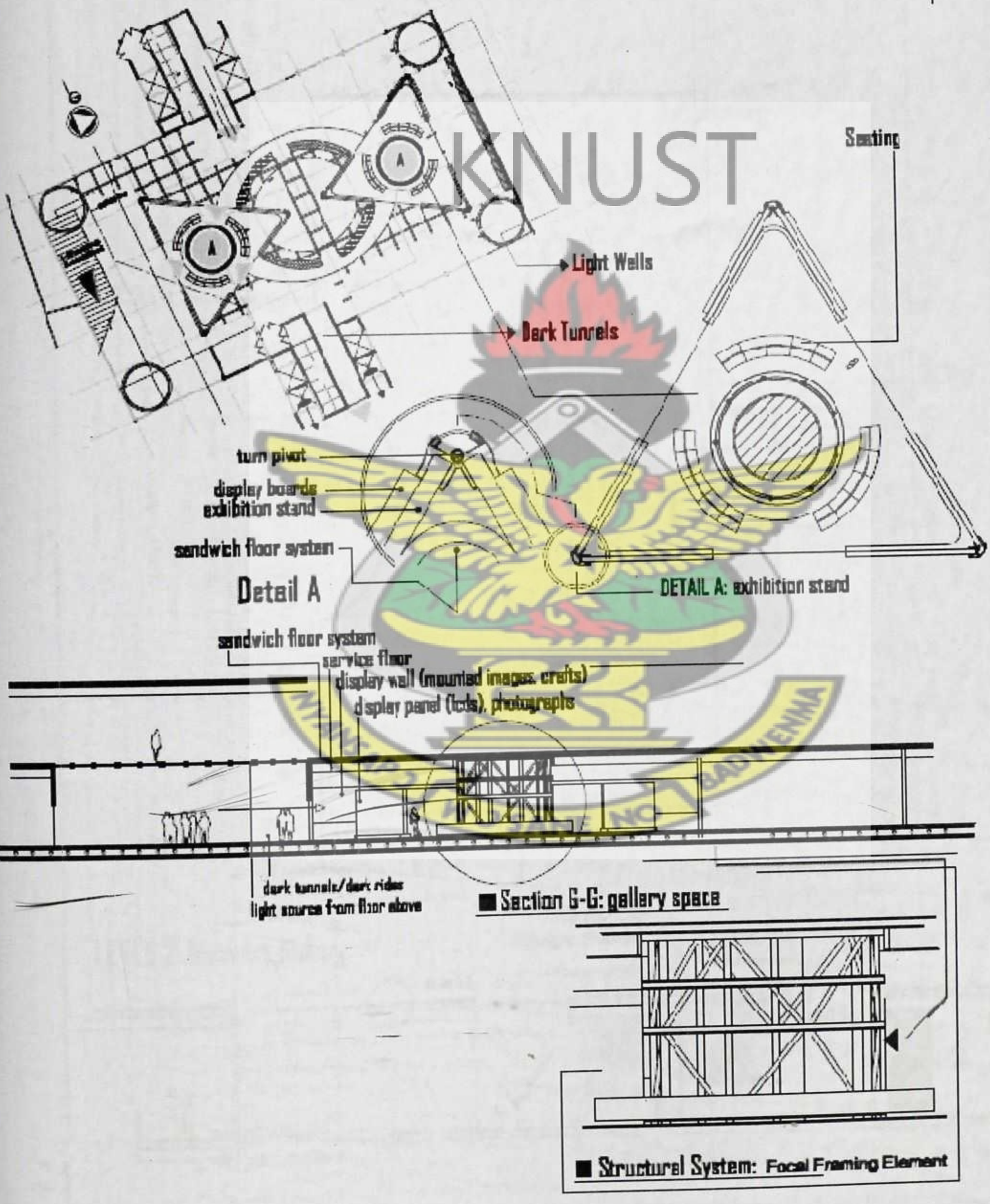

Figure 5.19: Cultural Gallery - First Floor
Source: Author

v. GALLERIES: ART GALLERY (FIRST FLOOR)

The arts gallery utilised the intersecting flow pattern (with a neutral core) to create points of interaction even along the main circulation path. Interactive media displays are set along the main circulatory route in such a way as to engage multi-participation. The main gallery was designed to accommodate both surface-mounted and grounded exhibits (see figure 5.20).

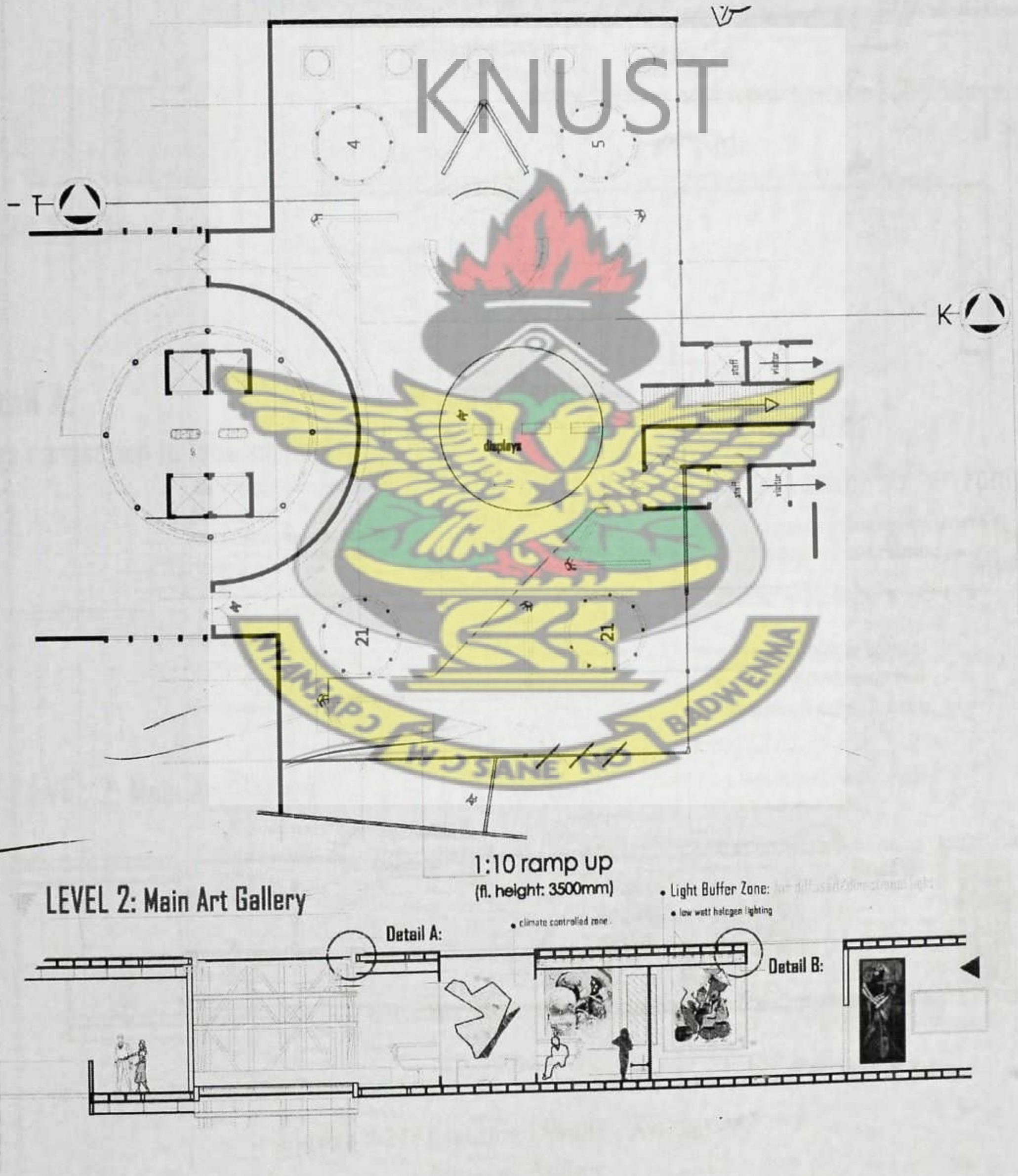

Figure 5.20: Arts Gallery - First Floor
Source: Author

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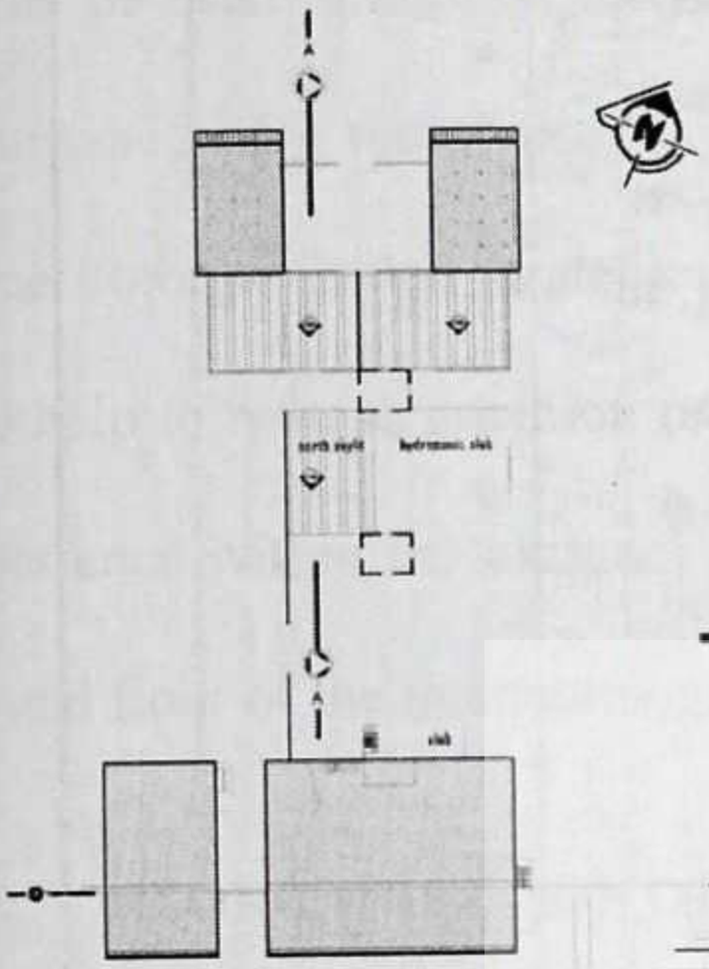
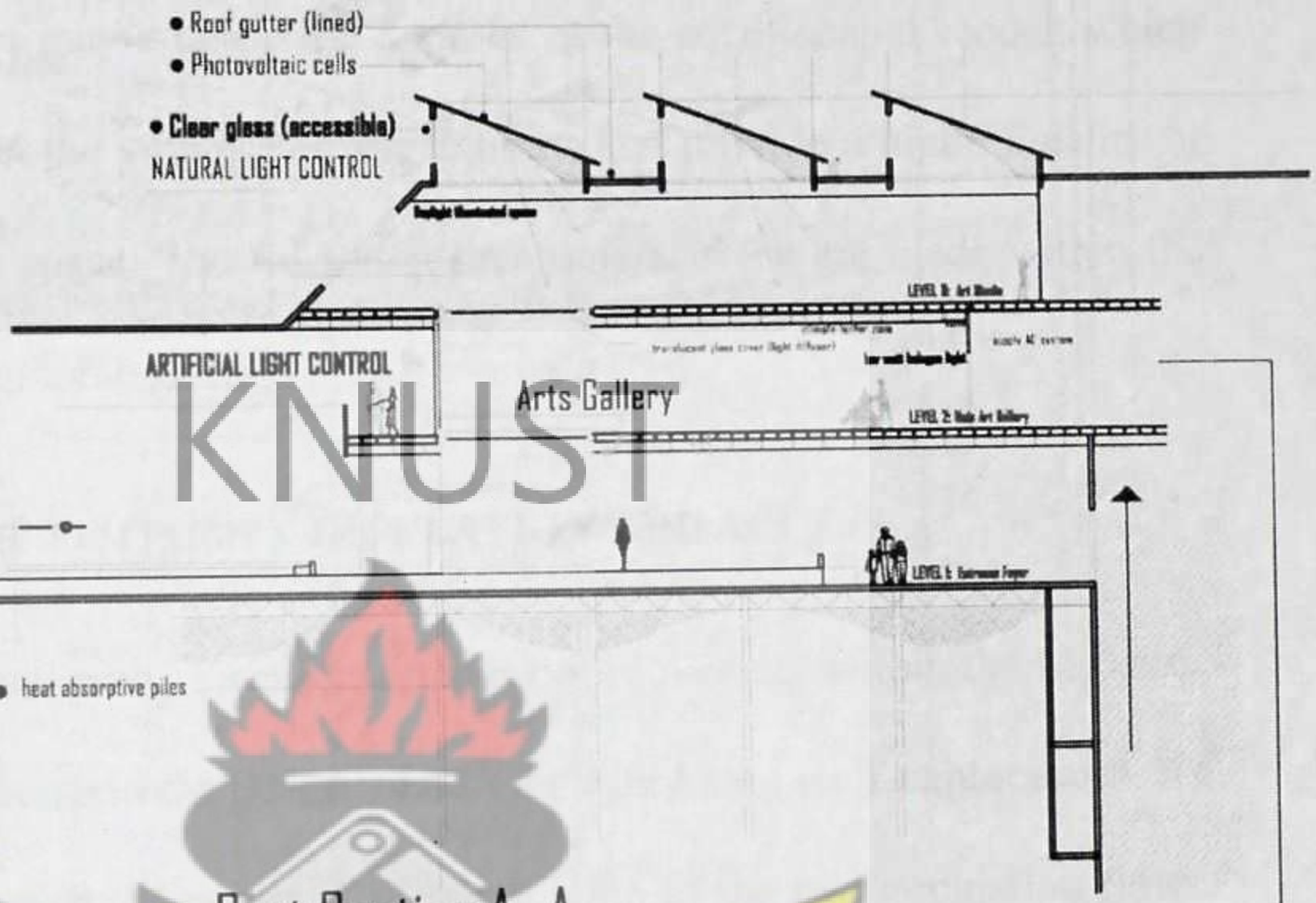
vi. AMBIENT ENVIRONMENT:



■ Key Roof Plan: lower level

Climate & Lighting Control

Arts Gallery



■ Part Section A- A

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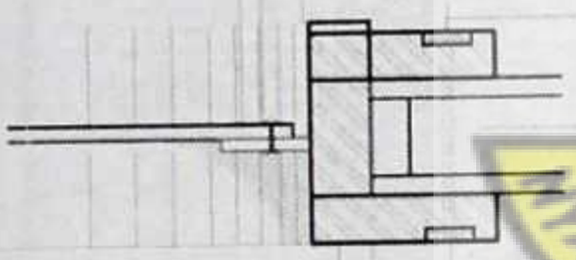
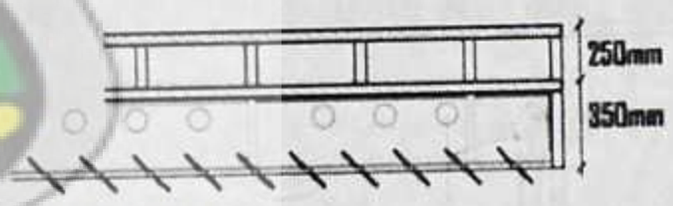
Detail A:

glass connection to tube support



Detail B:

light attic/buffer zone



- low watt halogen lighting
- warm incandescent bulb
- translucent ceiling louvres

LEVEL 2: Main Art Gallery

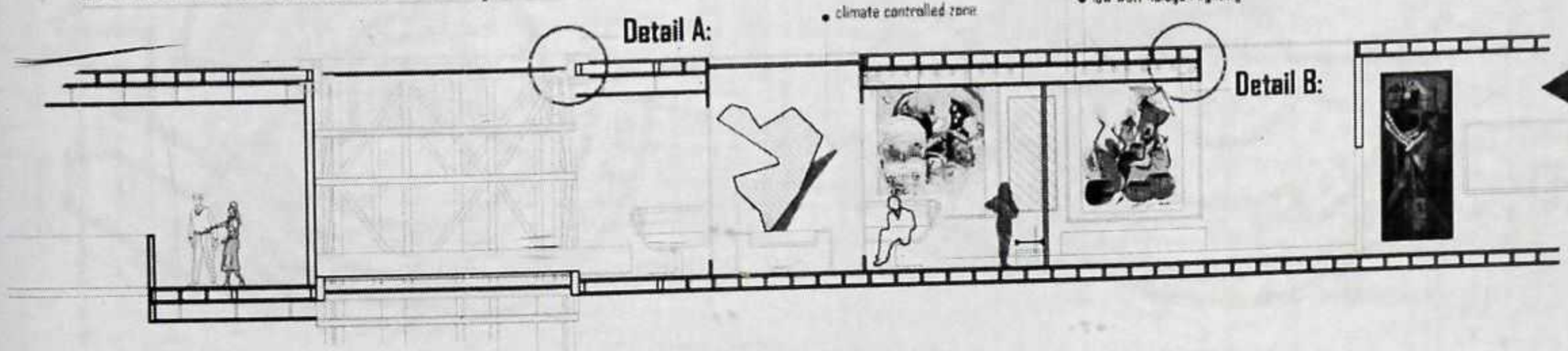


Figure 5.21: Lighting Details - Art Gallery
Source: Author

5.6 RECOMMENDATIONS: The Ghana National Museum

For the Ghana National Museum, it is recommended that the concepts of socio-spatial design model be used to address the *reorganisation* of the space. It is important here to stress the importance of a reorganisation and not a redesign since the main issue was not with the space. Reorganisation strategies may employ the features of the socio-spatial model, which will help to refocus attention on the vibrancy of the exhibits and provide a higher quality of experience within the museum space. The following recommendations are made within the ground floor of the main ethnographic gallery.

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i. REORGANISATION OF VISITORS' CIRCULATION AND ACCESS

Figures 5.22 shows the flows and paths for the two means of movement within the Museum, i.e., the structured tour circulation and the unstructured tour circulation (self-exploration). An overlay of one on the other reveals the points of differentiation of the two circulation flows. In the case of the un-structured tour, the visitors' spatial interactions guided their movement within the gallery space. The circulation flows within the un-structured tour also showed less conflict points than those within the structured tour session.

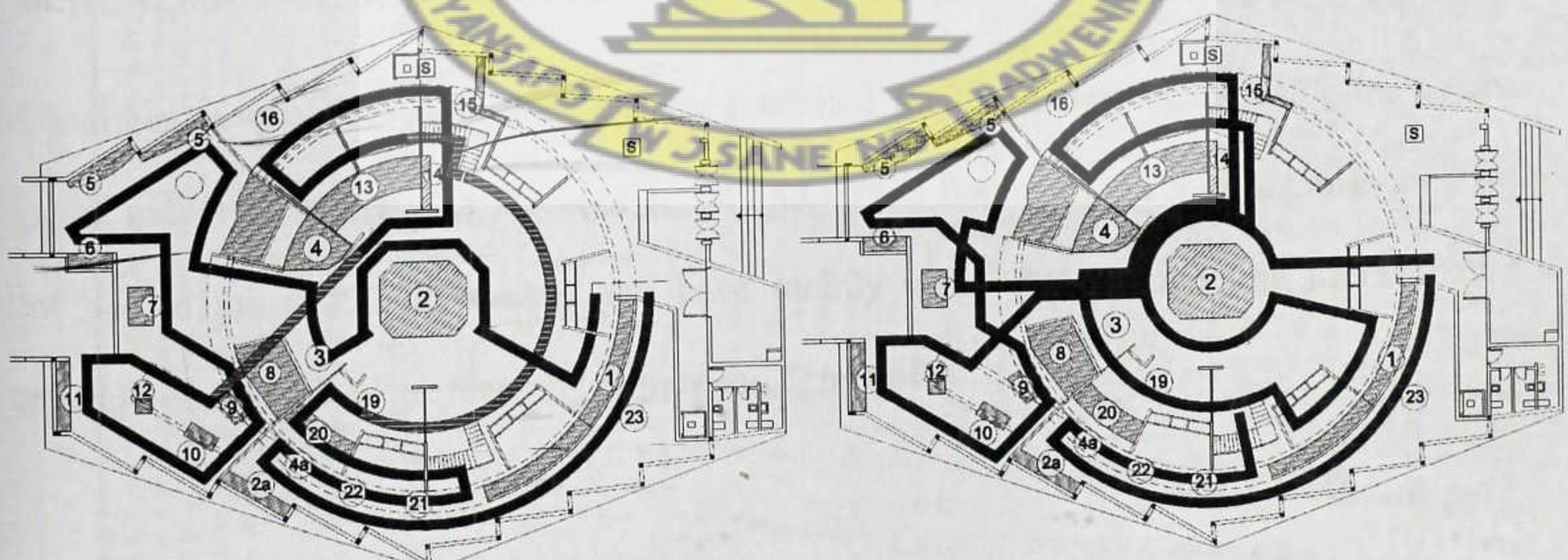

Figure 5.23: Flow Patterns within the Ghana National Museum (ethnographic section) (left): structured tour; (right): self exploration

Source: Author

As such, it is recommended that circulation within the gallery be re-examined to look at integrating better with the gallery space. This may be based on the conceived arrangement of featured exhibitions, but ultimately must relate to the spatial organisation of the gallery. Accesses to exhibits must permit room for both private and public viewing; in this regard, the exhibits must be examined to determine their nature of attraction and the level of attraction.

ii. REDISTRIBUTION OF POPULATION DENSITIES

The distribution of population densities also proved to be responsible for causing frustration and public disinterest. The high concentrations of visitors within the space seemed to retard movement and ultimately made the visitors give up the tour. Private and public zones were almost indistinguishable within these concentrations. This distribution is based mainly on the arrangement of the exhibits. As such, it is recommended that the arrangement of the exhibits be done in order to clearly define and distribute population densities.

iii. RESULTANT RECOMMENDATIONS

A number of spatial organisations can be generated for the gallery space using the socio-spatial model to ensure high levels of social and spatial interaction. These organisations are outlined in the following models and have mainly taken into account the users' spatial appreciation as well as the resulting population densities.

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a. The Centralised Theme

The first model is deemed as being highly suited to the existing gallery space. It is based on the radial flow pattern where there is the creation of a centralised artefact or created scene that narrates the overall subject matter of the exhibition. Due to the arrangement of structural members within the gallery space, the arrangement of the exhibits was made to follow the series of voids and paths created by the structural members. The main foyer or distribution space is found on the southern periphery of the gallery. The main circulatory axis is still maintained along the north-south path that leads into the contemporary gallery space; in addition to this, radial connections are created that lead from each exhibit towards the central space (figure 5.24).

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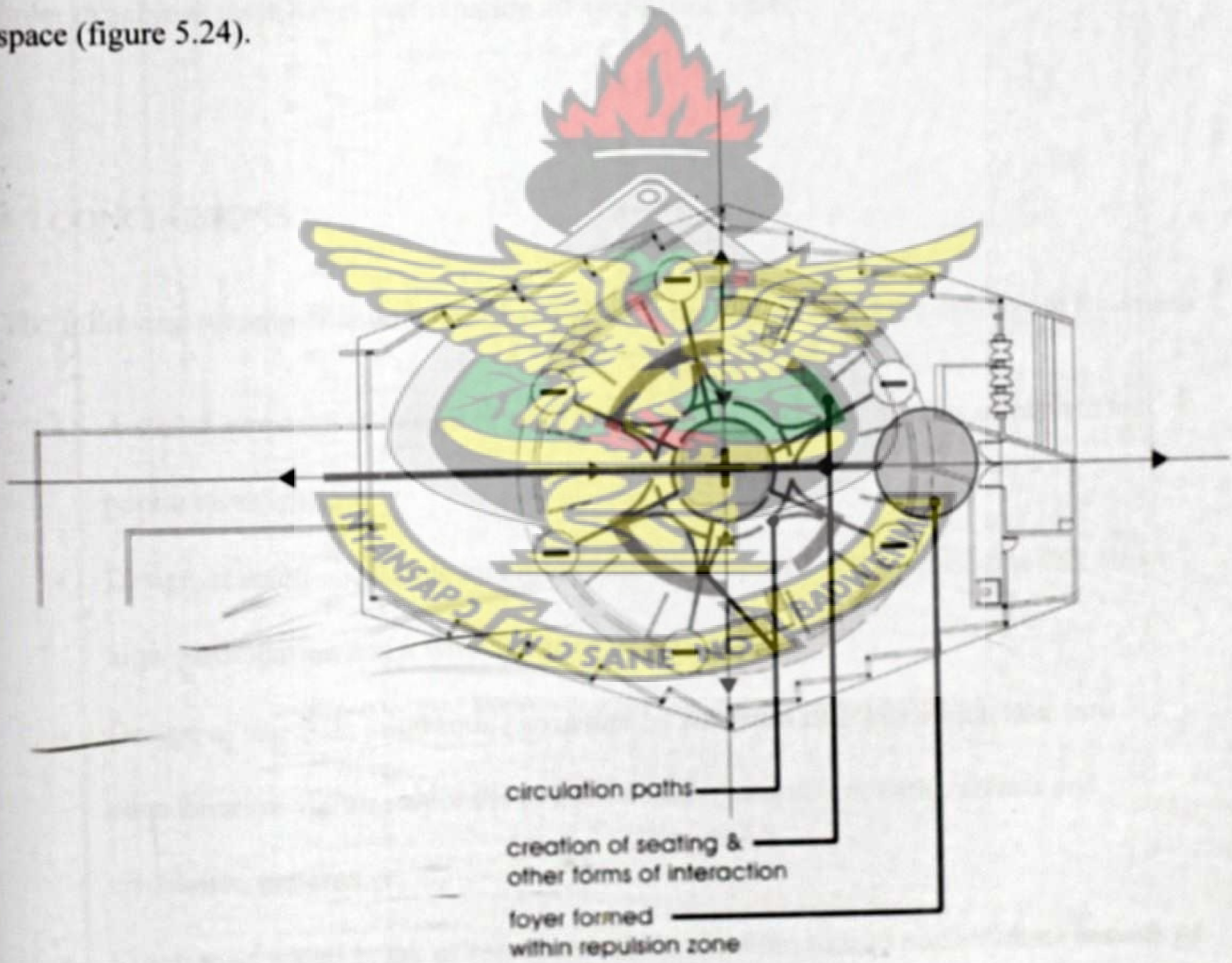

Figure 5.24: Recommended centralised theme: Ghana National Museum
Source: Author

b. The Circular Theme

The utilisation of this flow pattern allows the central space of the gallery to be transformed into a large foyer. This is helps better position and orient visitors within the space. This freed central core allows incorporates a number of physical features such as seating, reception point, navigational features.

c. Separate Themes or Events

It is also possible to structure the gallery space, in order to achieve separate events or themes within the same space (figure 5.26). This is a system of arrangement that economises space in order to achieve multi-level participation all within one space.

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5.7 CONCLUSIONS

The following recommendations are also made for the design and development of museums:

- A social approach to design of gallery spaces that includes aspects of private and public participation.
- Design of multi-accessible and multifunctional spaces within museums that allow high participation and a wide range of experiences.
- Design of museum programme structure by museum officials which take into consideration visitor responses to use of space, interaction with exhibits and circulation patterns.
- Creation of social break or rest spots within museum tour to ensure lesser periods of visitor fatigue.
- Constant recreation of museum exhibitions messages to maintain high interest of visitors.

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■ Appendix A: Observation Schedule

Observer's Name: ..... Date: .....

Focal Subject: Adult (A) ☐ Child (C) ☐ Alone (L) ☐ Group (G) ☐

Participant No.: .....

Observations: Record where subject goes by noting path on drawing, number their stop points and record these below with behaviours coded and amount of time spent. Use separate coding for each individual's actions and movement.

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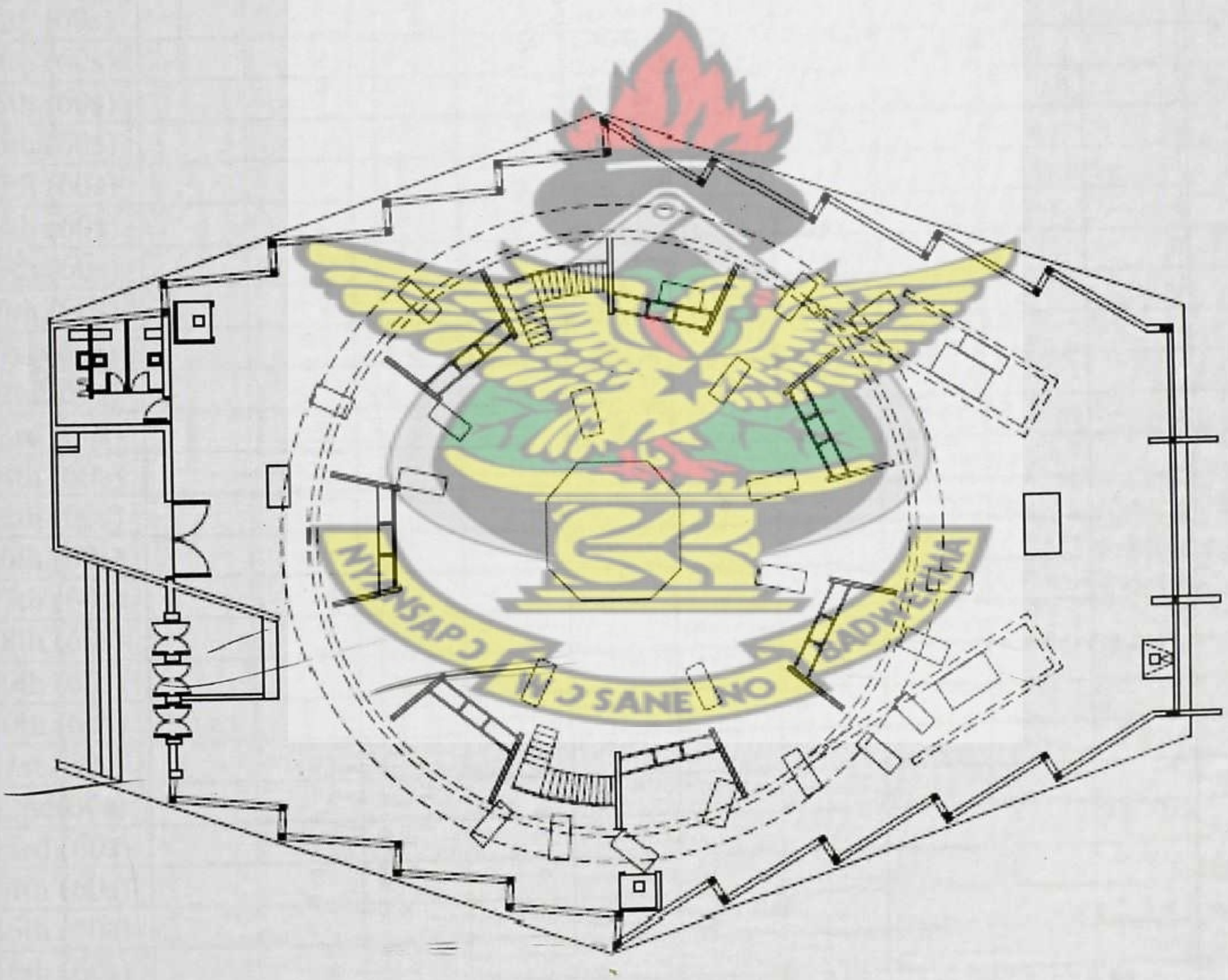

Start Time: ..... **End Time:** .....

Timed Sampling - (Individual Study):

Observed Behaviour	T	R	O	E	Q	P	TO	S	W	RA	B/J
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43rd (60s)											

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Observed Behaviour	T	R	O	E	Q	P	TO	S	W	RA	B/J
44th (60s)											
45th (60s)											
46th (60s)											
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59th (60s)											
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Observation Coding:

Touch	**T**	Roam	**RA**	Walk (around exhibit)	**W**		
Read	**R**			Join others	**J**		
Observe	**O**	Question	**Q**	Picture Taking	**P**		
Explain	**E**	Sit	**S**	Talk (to others)	**TO**		

Timed Sampling - (Group Study):

Observed Behaviour	T	R	O	E	Q	D	P	TO	S	W	RA	B/J
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4th (60s)												
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Observed Behaviour	T	R	O	E	Q	D	P	TO	S	W	RA	B/J
44th (60s)												
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Observation Coding:

Touch	**T**	Roam	**RA**	Walk (around exhibit)	**W**	Join others	**J**
Read	**R**	Discipline	**D**	Separate (from others)	**B**		
Observe	**O**	Question	**Q**	Picture Taking	**P**		
Explain	**E**	Sit	**S**	Talk (to others)	**TO**		

Follow-up Interview Questionnaire (to be completed at the end of entire visit/tour)

Interview # .....

A. FOR INDIVIDUAL VISITORS:

1. Have you ever been to the Ghana National Museum? Yes ☐ No ☐

2. How many times did you visit the Museum last year? .....

3. What were your expectations coming to the museum? .....

4. Which aspects of the exhibition did you enjoy? .....

.....

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5. What attracted you to particular exhibition units? .....

.....

6. Did you feel tired / bored at any point during the tour? Yes ☐ No ☐

7. Were you uncomfortable in the space with other visitors? Yes ☐ No ☐

8. What accounted for this discomfort? .....

.....

9. Were you at any other time uncomfortable in the exhibition area? Yes ☐ No ☐

10. What accounted for that feeling of discomfort? .....

.....

11. Was it easy to find your way around the exhibition space? Yes ☐ No ☐

12. Were there times when you felt the need for privacy? Yes ☐ No ☐

13. In your view, was there a place within the exhibition area that allowed you to experience privacy? .....

Follow-up Interview Questionnaire (to be completed at the end of entire visit/tour)

Interview # .....

B. FOR GROUP VISITORS:

1. Have you ever been to the Ghana National Museum? Yes ☐ No ☐

2. Did you attend as a group? Yes ☐ No ☐

3. Was this the same group you attended with? Yes ☐ No ☐

4. What were your expectations coming to the museum? .....

.....

5. Which aspects of the exhibition did you enjoy? .....

.....

6. What attracted you to particular exhibition units? .....

.....

7. Did you feel tired / bored at any point during the tour? Yes ☐ No ☐

8. Were you uncomfortable in the space with other visitors? Yes ☐ No ☐

9. What accounted for this discomfort? .....

.....

10. Were you at any other time uncomfortable in the exhibition area? Yes ☐ No ☐

11. What accounted for that feeling of discomfort? .....

.....

12. Was it easy to find your way around the exhibition space? Yes ☐ No ☐

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13. Did you feel the need to split up at any point in time? Yes ☐ No ☐

14. Why? .....

.....

15. Why did you rejoin the group? .....

.....

16. Were there times when you felt the need for privacy? Yes ☐ No ☐

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17. In your view, was there a place within the exhibition area that allowed you to experience privacy? .....

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■ Appendix E: Observation Table

EXHIBITS/ DURATION	1	2	3	4	5	6	7	8	9	10
1st (5 mins)										
2nd (5 mins)										
3rd (5 mins)										
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9th (5 mins)										
10th(5 mins)										
11th(5 mins)										
12th(5 mins)										

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EXHIBITS/ DURATION	11	12	13	14	15	16	17	18	19	20
1st (5 mins)										
2nd (5 mins)										
3rd (5 mins)										
4th (5 mins)										
5th (5 mins)										
6th (5 mins)										
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11th(5 mins)										
12th(5 mins)										

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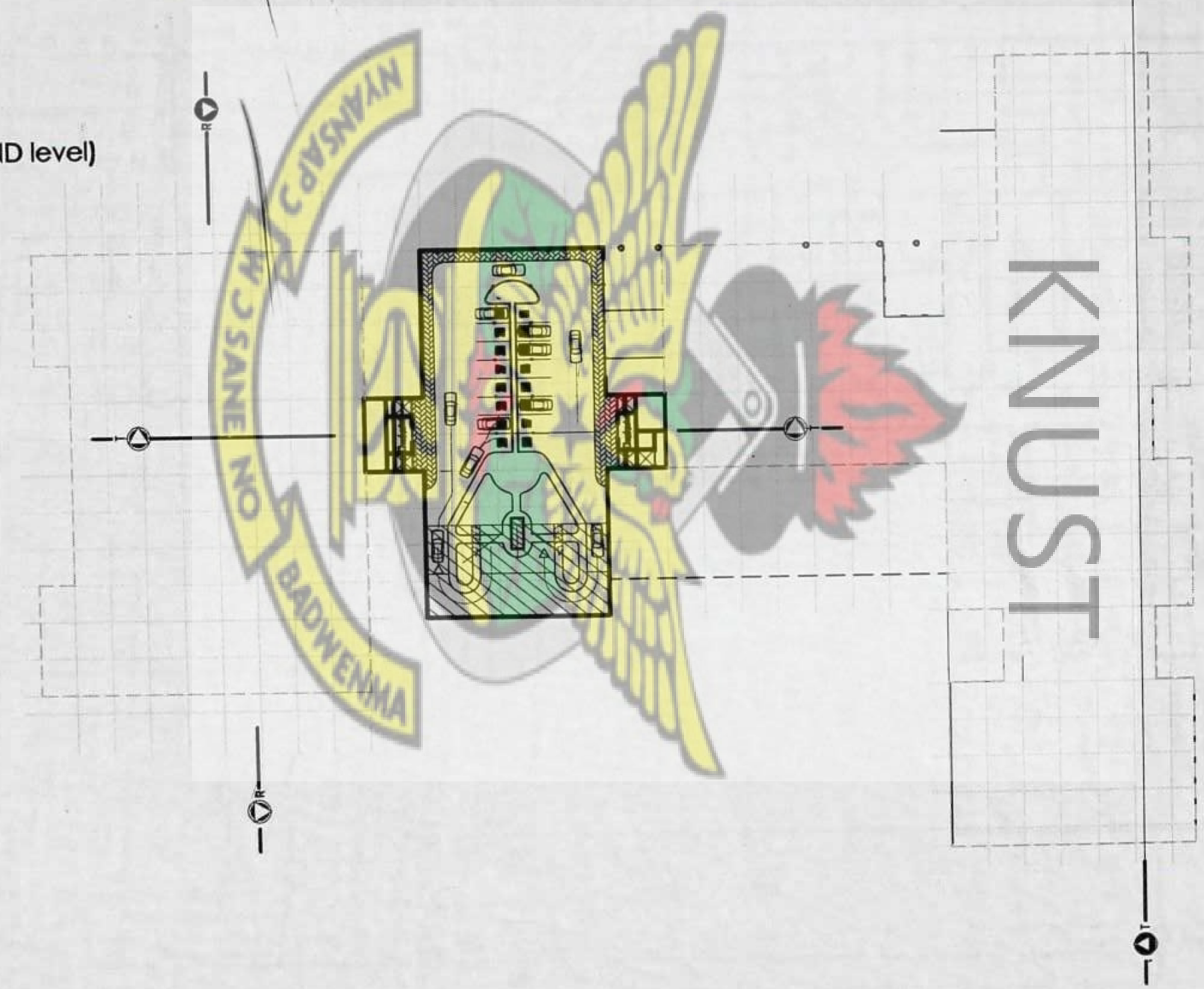
LEGEND

zone A: staff parking (2ND level)



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SUB-BASEMENT 2 PLAN

LEGEND

zone A: staff parking (1st level)

zone B: artefact delivery parking

zone C: kitchen staff parking
service van parking

Staff drop-off zone
loading/ offloading bay

off-loading bay

holding rooms

Vaults: ATM, Art

Service Rooms
Kitchen Pantry

Service Yard

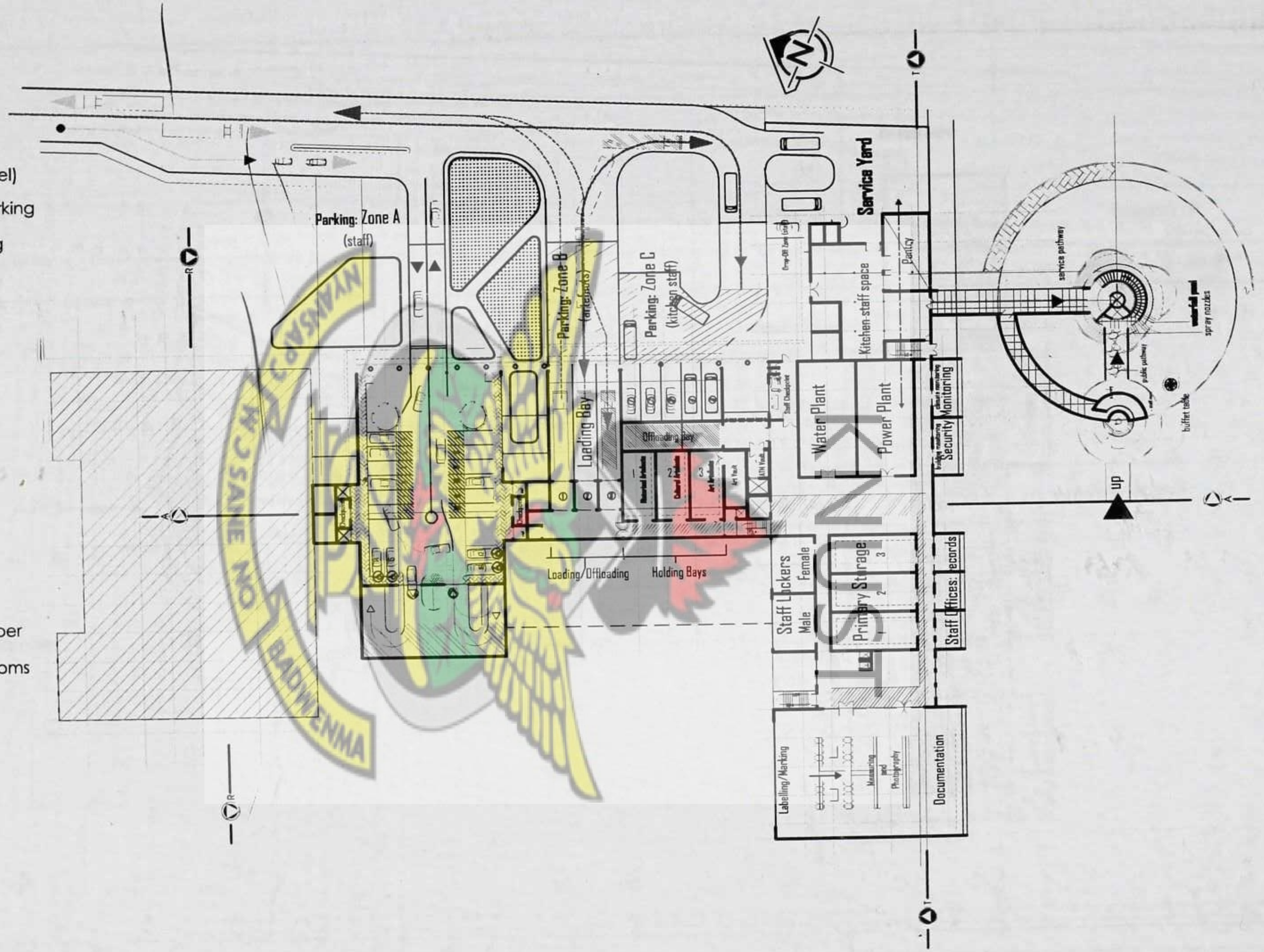
Main Storage Section

Staff Lockers

Records/Inventory Office

Artefact Processing Chamber

Surveillance Monitoring Rooms
building surveillance
climate monitoring



SUB-BASEMENT PLAN

LEGEND

Entry Foyer

Exhibition Atrium

Main reception point:
ticket, bookings stand
audio-visuals section
informations, inquiries
visitor washrooms

Press Room

Information point

Orientation lounge

Public Relations Office

off-loading bay

holding rooms

Cafe Lounge

Vaults: ATM, Art

Service Rooms

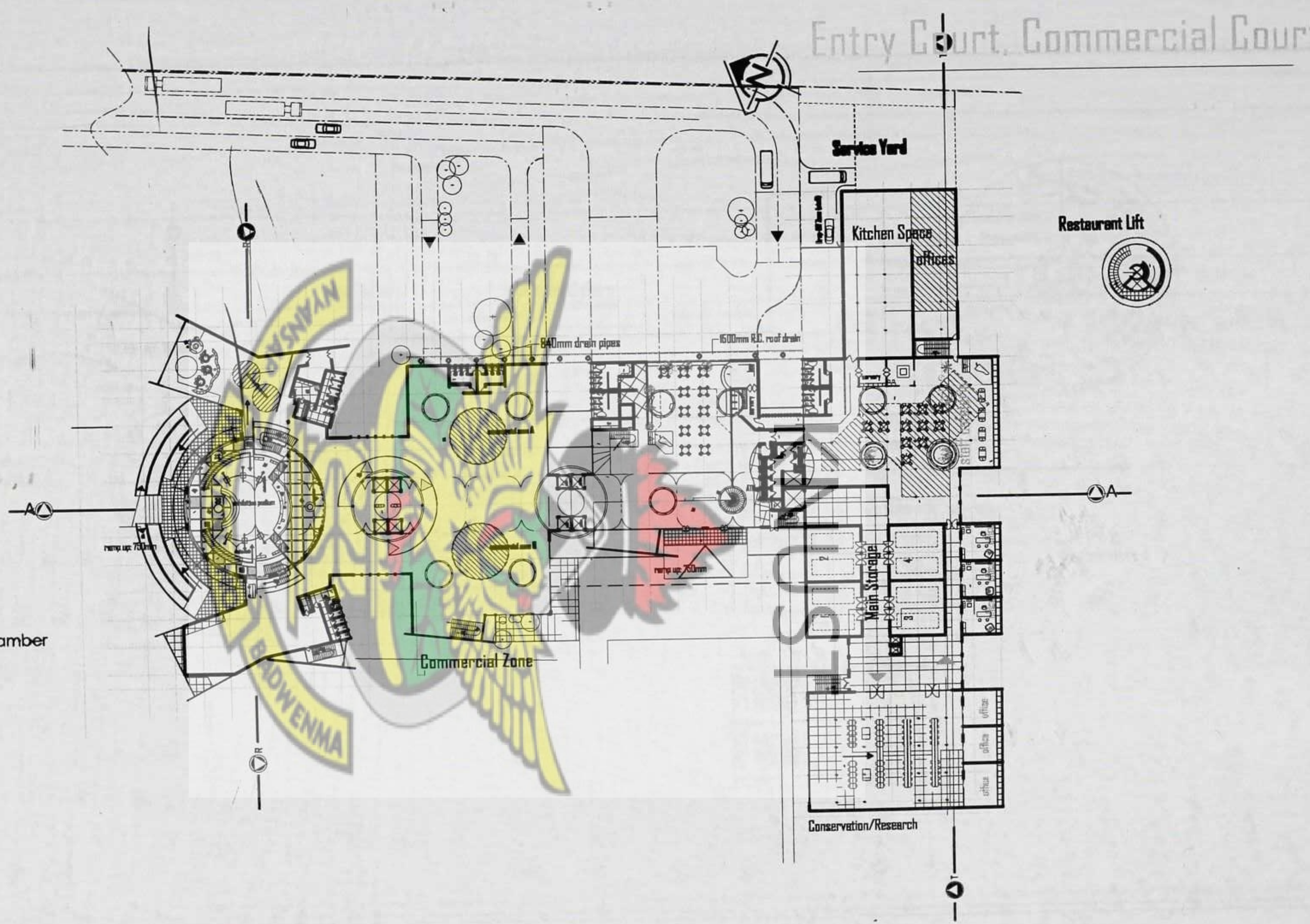
Kitchen Pantry

Main Storage Section

Workshop/Conservation Chamber

Staff Cafeteria

Staff Offices



GROUND FLOOR PLAN

LEGEND

Interactive Gallery

Arts Gallery

Culture Gallery

Culture Gallery

History Gallery

Conference/Seminar Room

Admin. Lounge

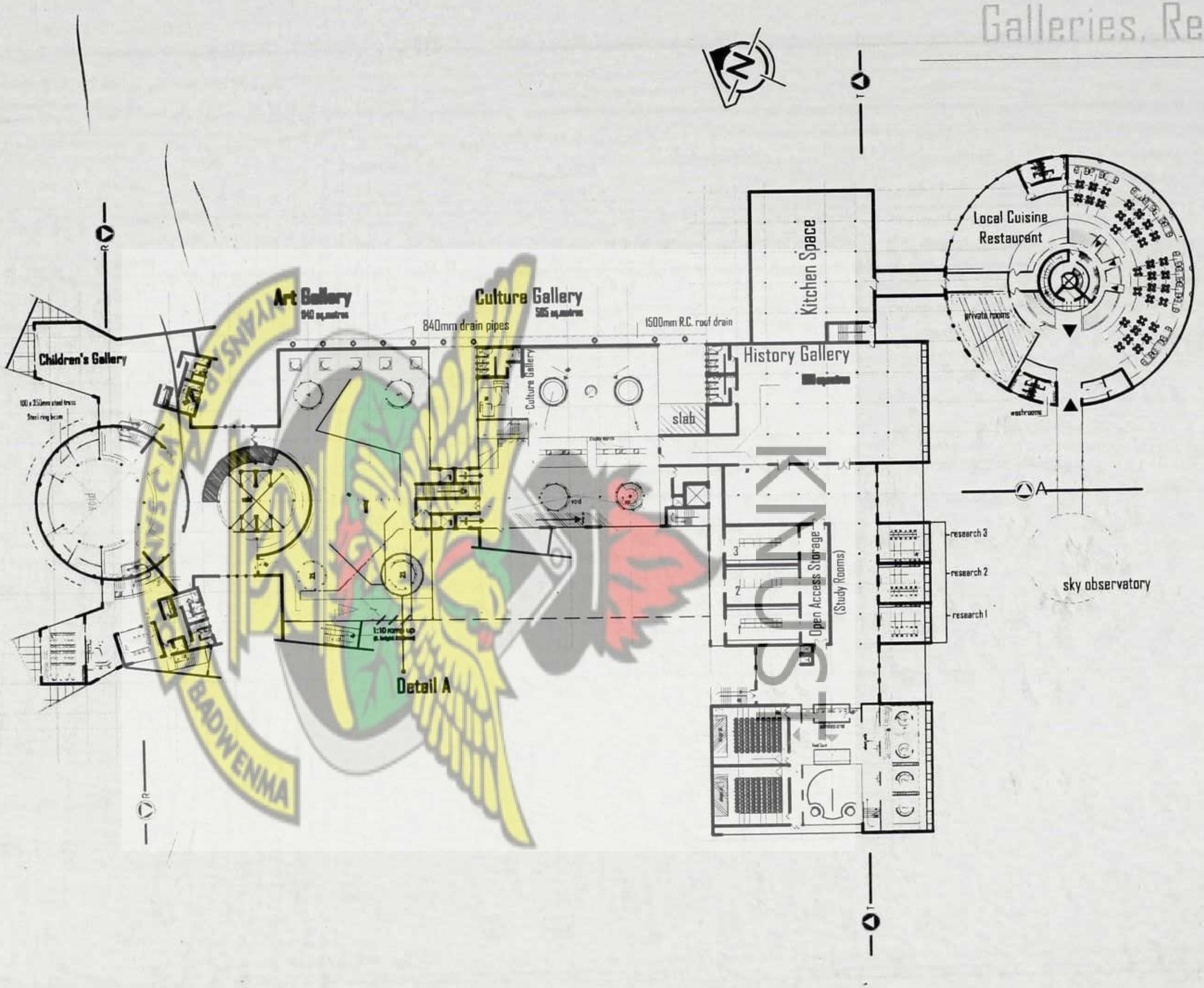
Lecture Rooms

Screening Lounge

Open Access Storage

Kitchen Space

Washrooms



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FIRST FLOOR PLAN LOWER LEVEL

LEGEND

Interactive Gallery

Arts Gallery

Culture Gallery

Culture Gallery

History Gallery

Conference/Seminar Room

Admin. Lounge

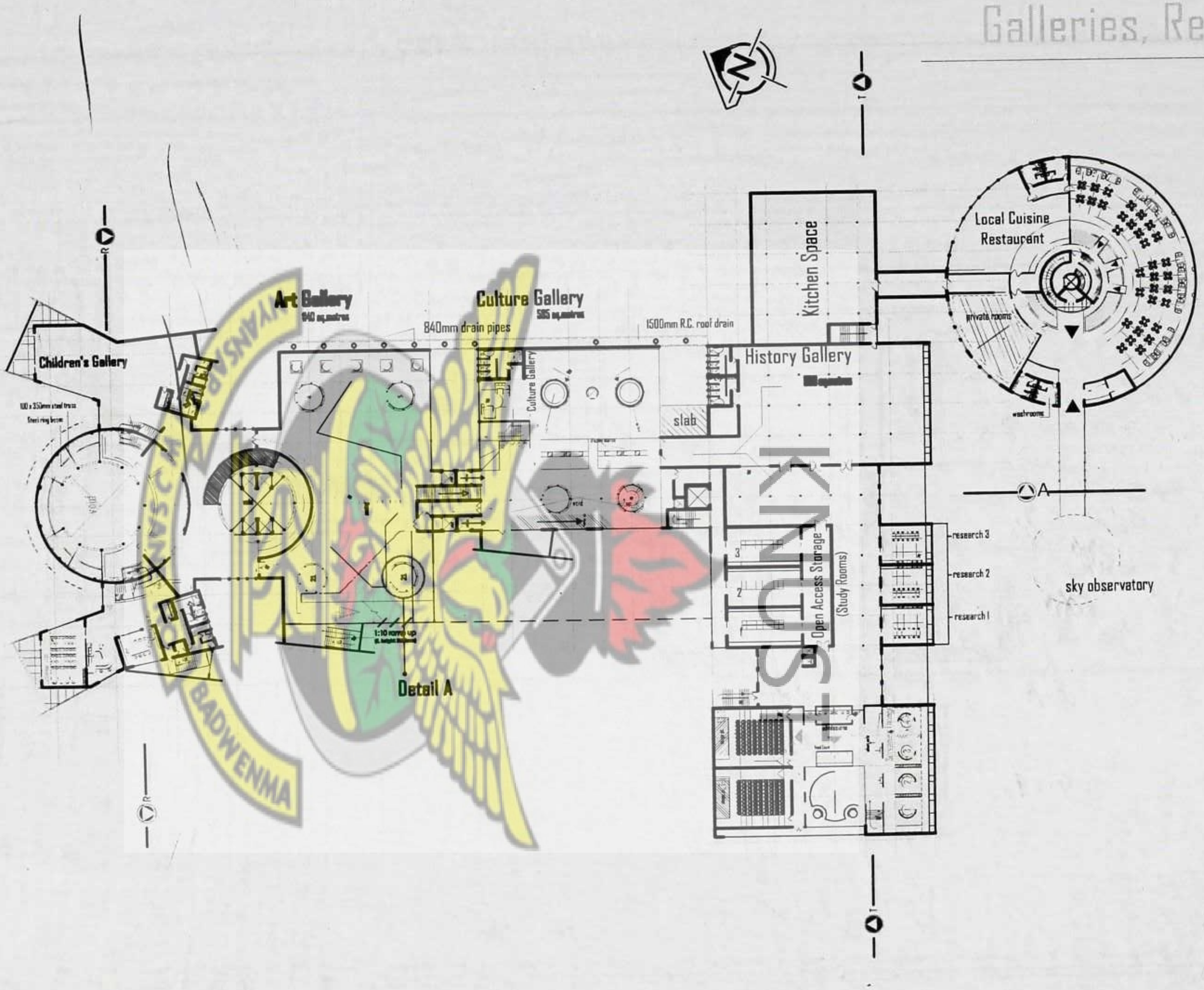
Lecture Rooms

Screening Lounge

Open Access Storage

Kitchen Space

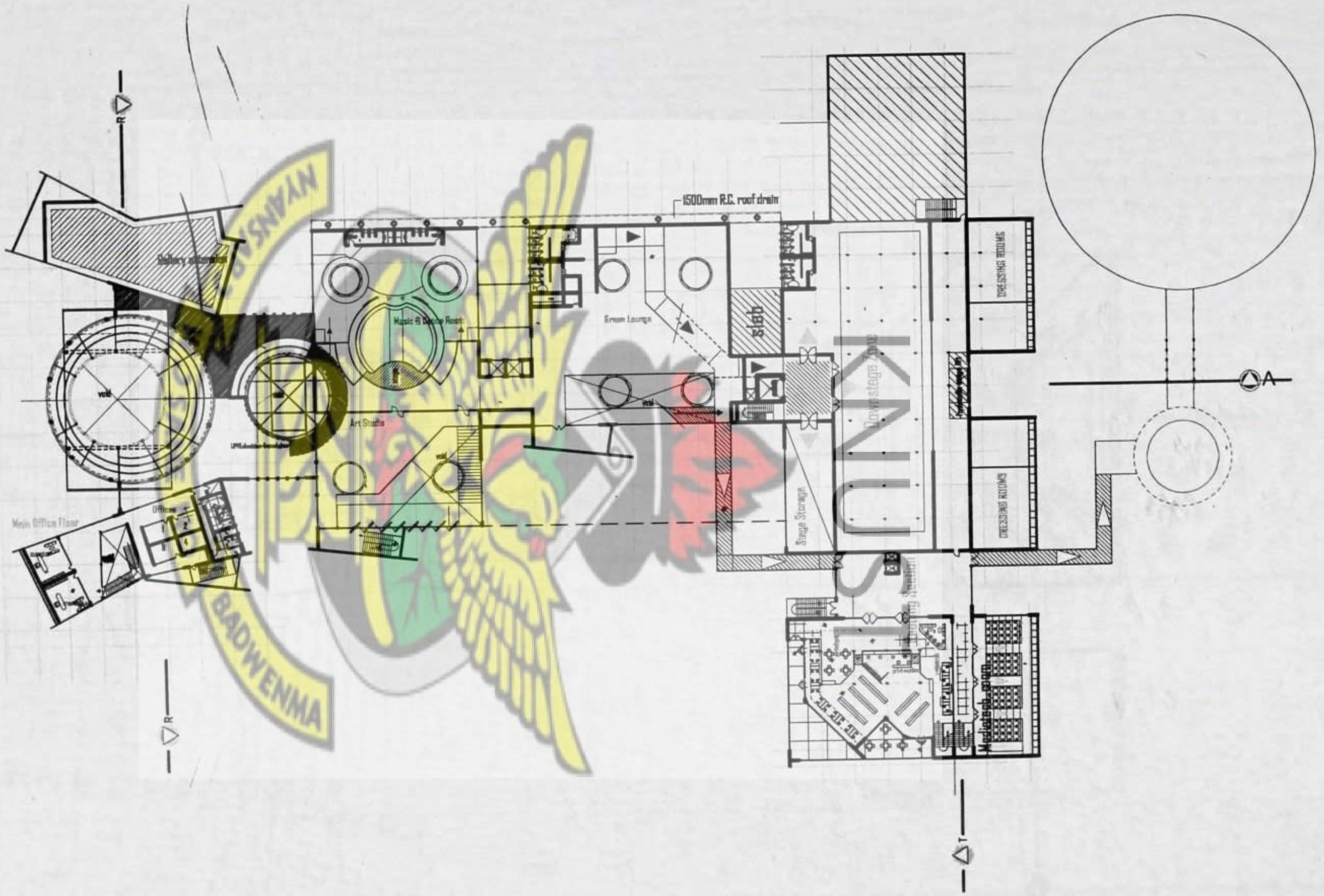
Washrooms



FIRST FLOOR PLAN LOWER LEVEL

LEGEND

- Arts Studios
- Children Workshop
- Music & Dance Room
- Reading Section
- Mediatech Room
- Downstage Rehearsal/Storage
- Gallery Extension



SECOND FLOOR PLAN

Multi-Auditorium Level

LEGEND

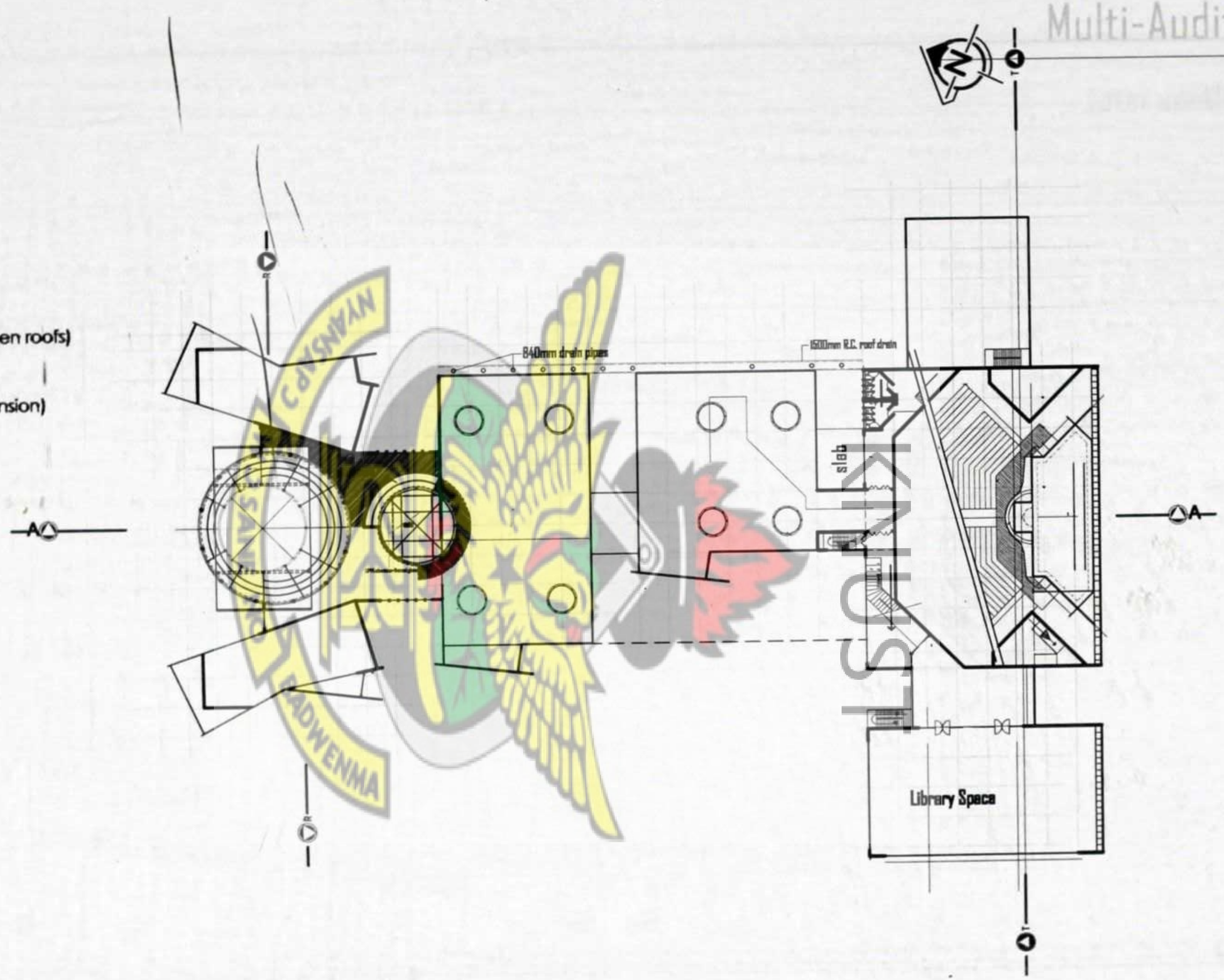
Staff Cafeteria/Lounge

Green Room

Hydroponic Roof Slabs (green roofs)

Multi-Purpose Auditorium

Library Section (upper extension)



THIRD FLOOR PLAN LOWER LEVEL

LEGEND

Staff Cafeteria/Lounge

Green Room

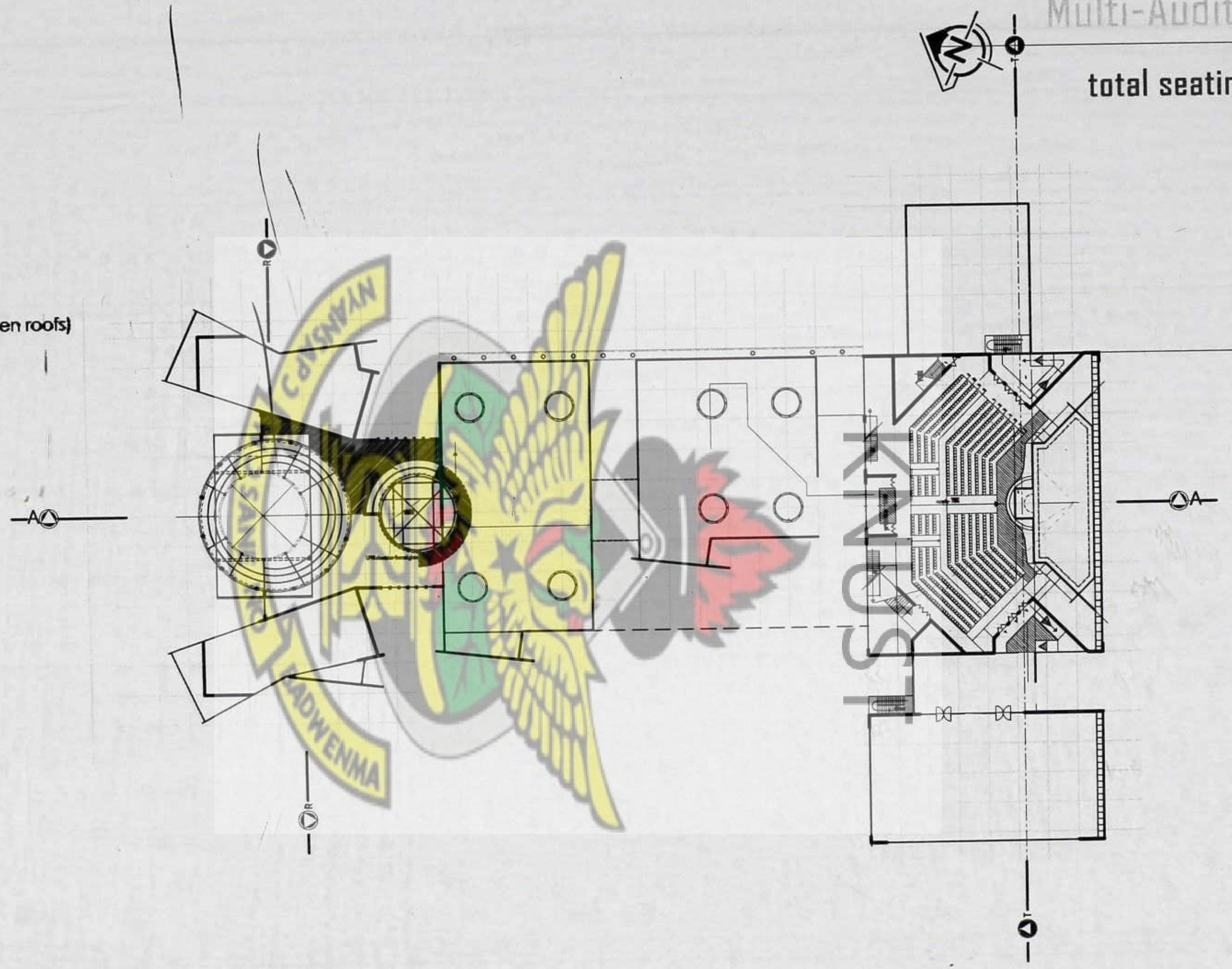
Hydroponic Roof Slabs (green roofs)

Multi-Purpose Auditorium

Upper Library Section

Multi-Auditorium Level

total seating capacity:730



THIRD FLOOR PLAN MAIN LEVEL

LEGEND

Auditorium Gallery

Green Room

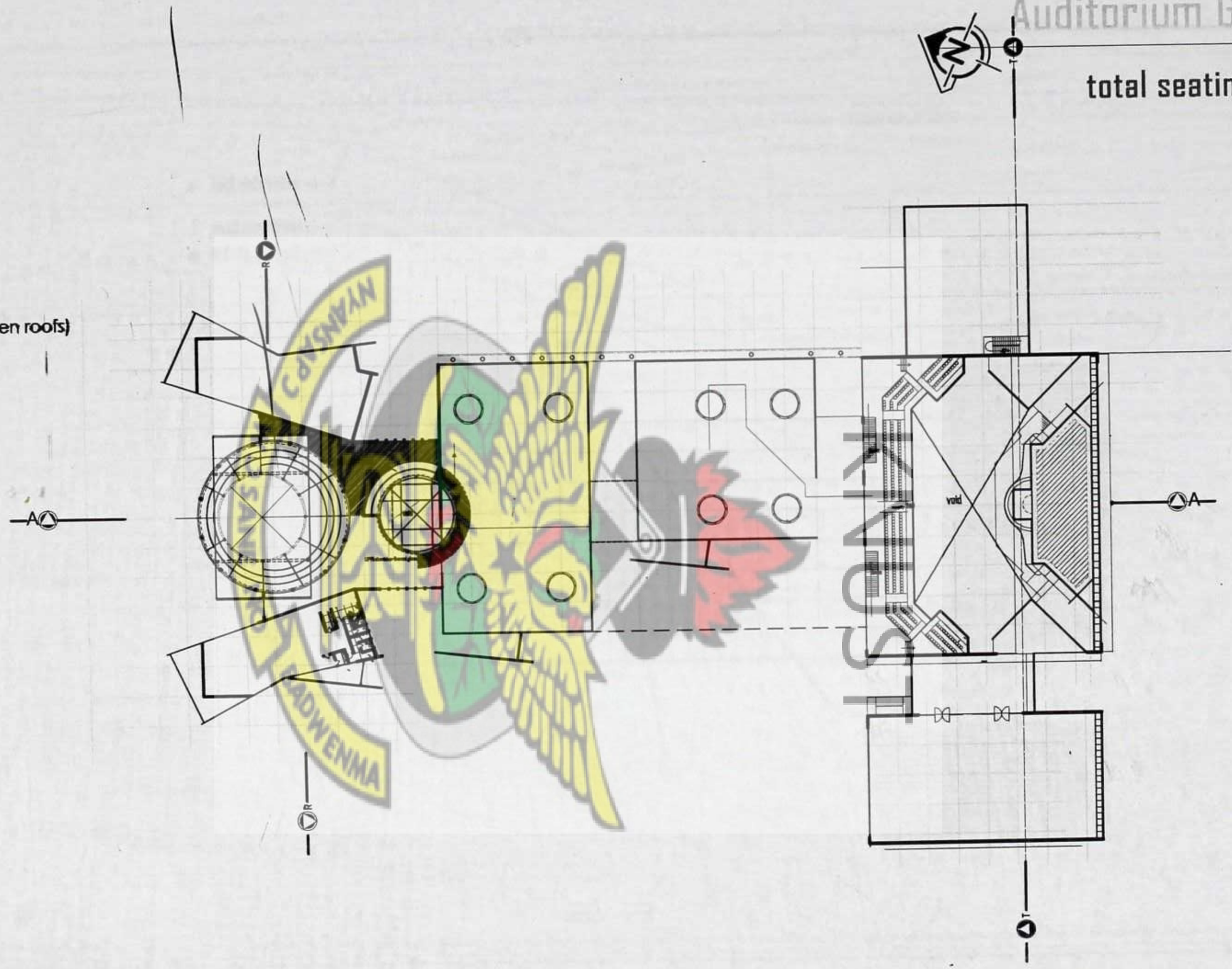
Hydroponic Roof Slabs (green roofs)

Multi-Purpose Auditorium

Library Section

Auditorium Gallery Level

total seating capacity:280



GALLERY LEVEL

LEGEND

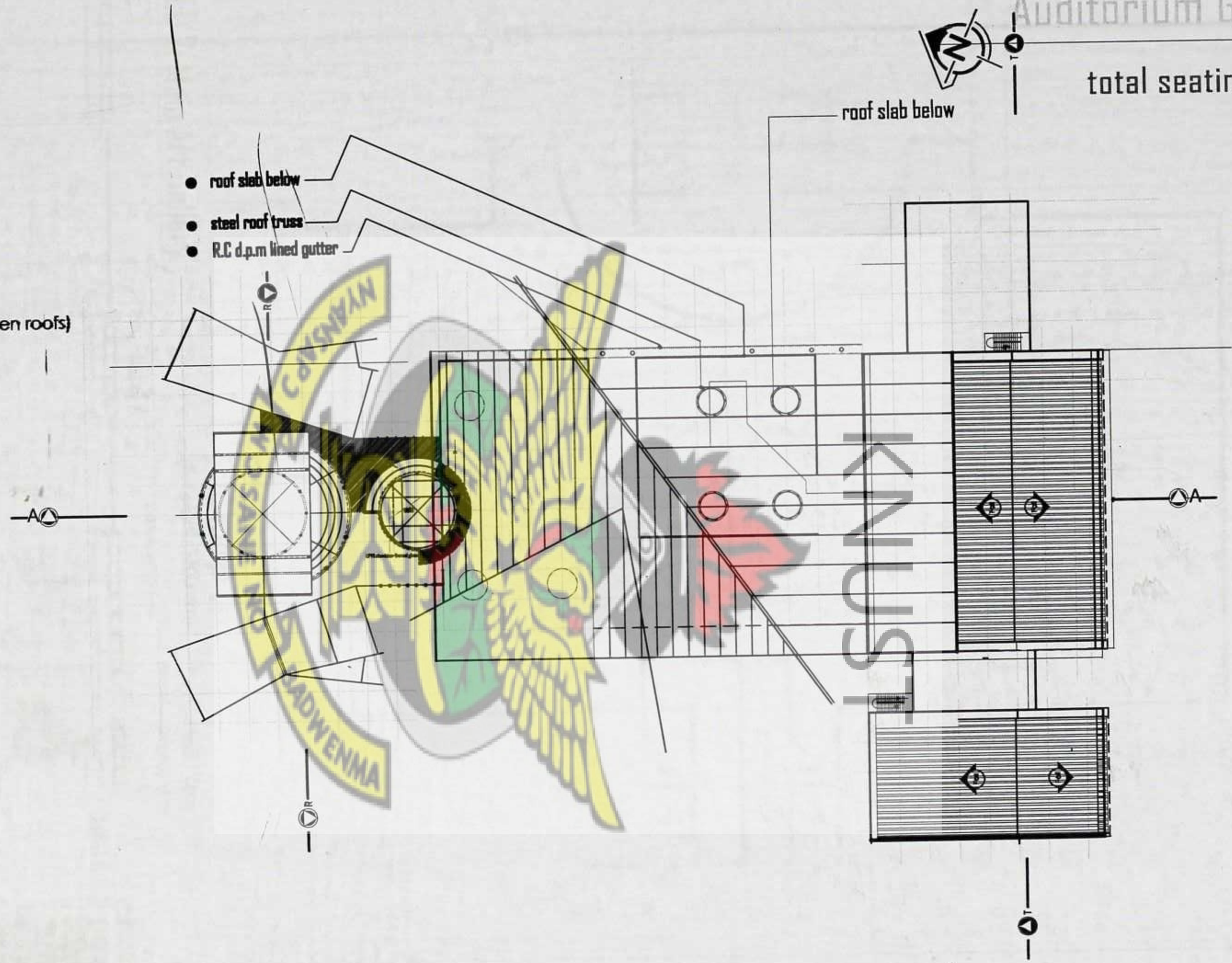
Auditorium Gallery

Green Room

Hydroponic Roof Slabs (green roofs)

Multi-Purpose Auditorium

Library Section



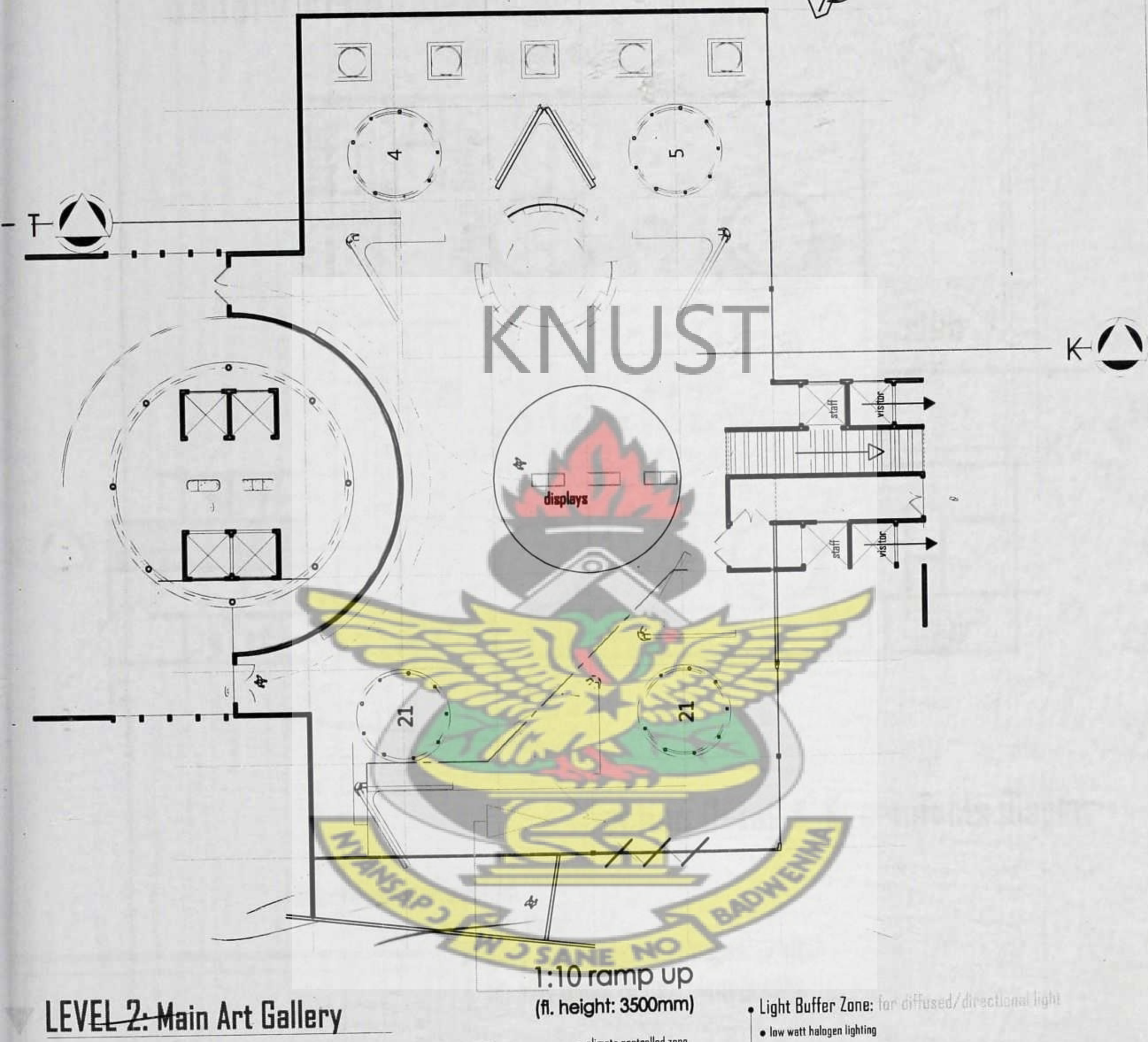
Auditorium Gallery Level

total seating capacity:280

ROOF LEVEL

Art Gallery

1140 sq.metres



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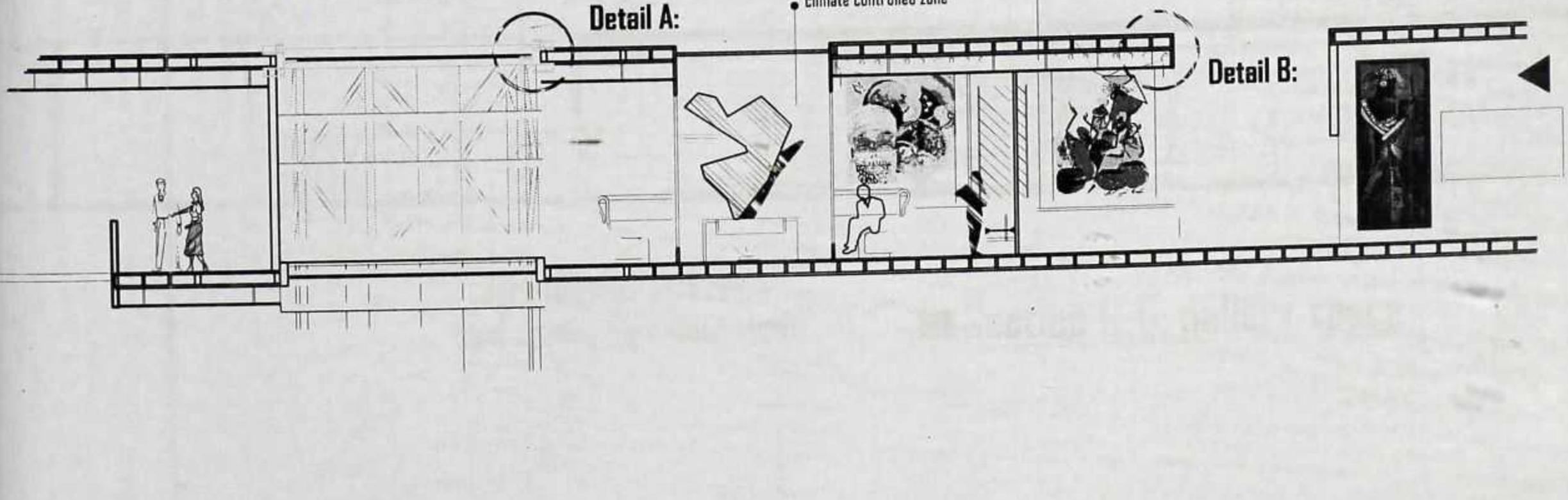
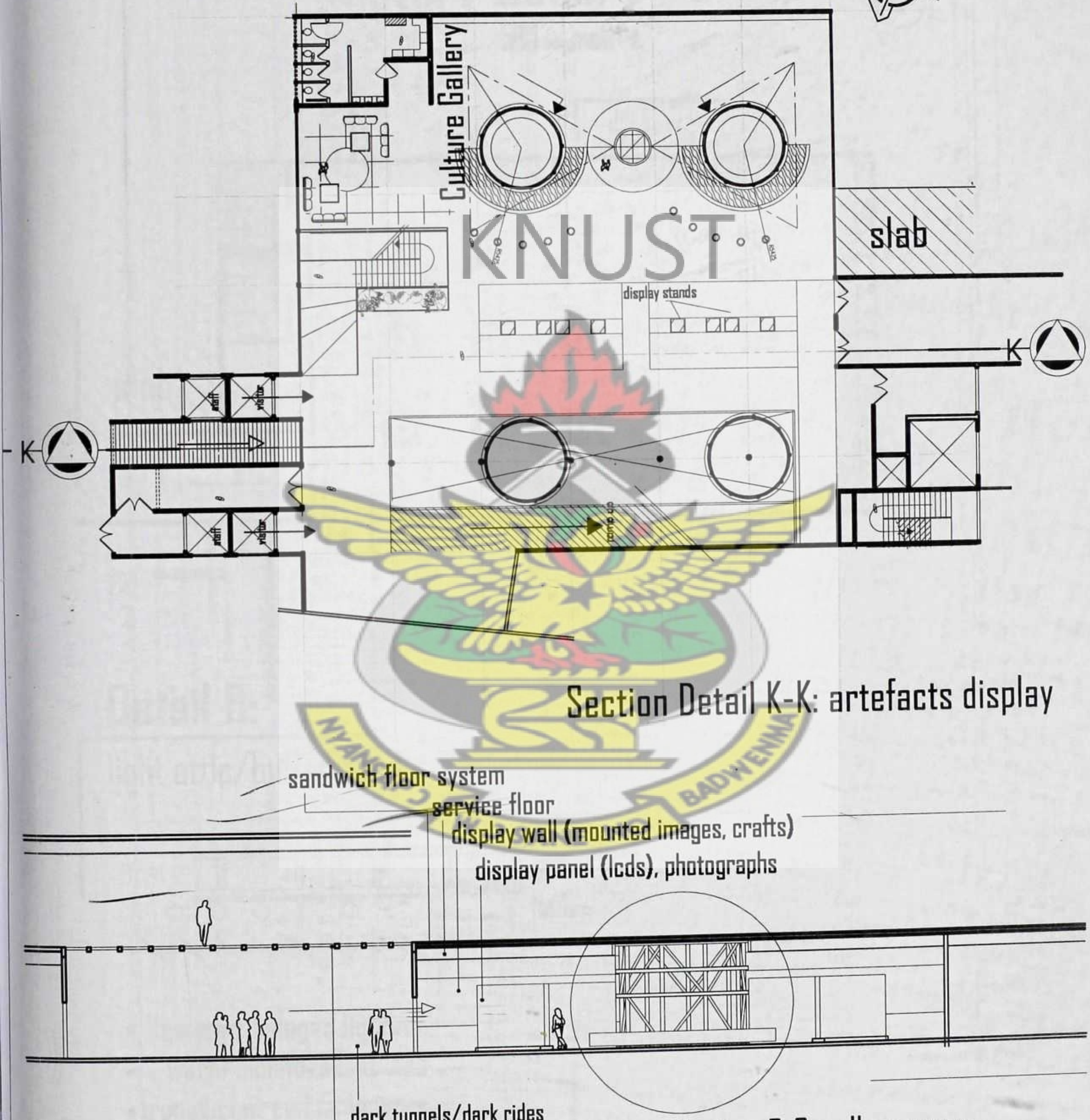
LEVEL 2: Main Art Gallery



Gallery Area Coverage:

595 sq.metres



Section Detail K-K: artefacts display

Section G-G: gallery space

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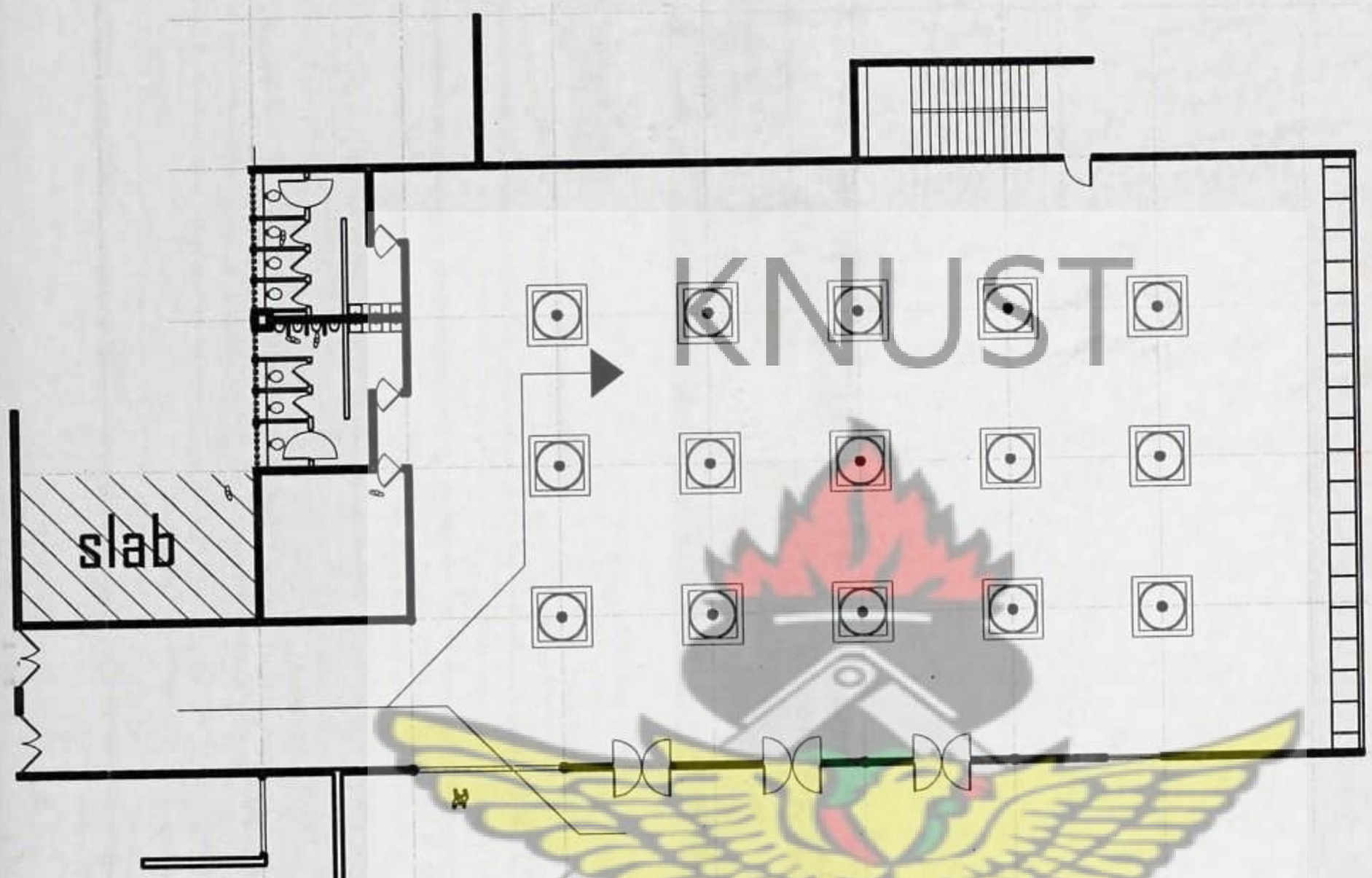
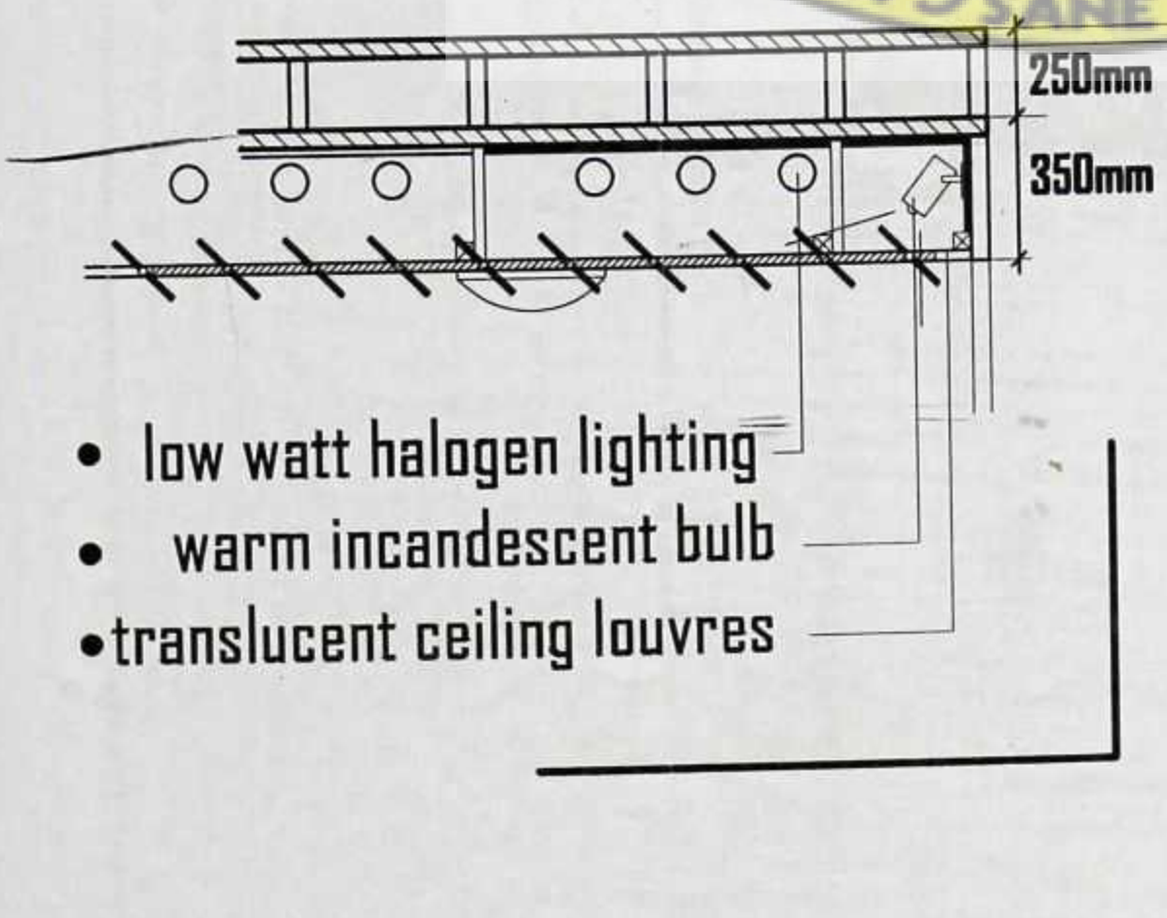
History Gallery

560 sq.metres



Detail B:

light attic/buffer zone



- low watt halogen lighting
- warm incandescent bulb
- translucent ceiling louvres

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NTAMPƆ WƆSANE NO BADWENHWA

Western Elevation