

2015

Design of Children's Event and Cultural Center in Osu, Accra, Ghana

rudi somuah

Follow this and additional works at: http://scholarworks.umass.edu/masters_theses_2

 Part of the [Architectural History and Criticism Commons](#), [Environmental Design Commons](#),
and the [Landscape Architecture Commons](#)

Recommended Citation

somuah, rudi, "Design of Children's Event and Cultural Center in Osu, Accra, Ghana" (2015). *Masters Theses May 2014 - current*. 247.
http://scholarworks.umass.edu/masters_theses_2/247

This Open Access Thesis is brought to you for free and open access by the Dissertations and Theses at ScholarWorks@UMass Amherst. It has been accepted for inclusion in Masters Theses May 2014 - current by an authorized administrator of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

**DESIGN OF A CHILDREN'S EVENT AND CULTURAL CENTER IN OSU,
ACCRA, GHANA**

A Thesis Presented

by

RUDI SOMUAH

Submitted to the Graduate School of the University of Massachusetts
in partial fulfillment of the requirements for the degree of

MASTER OF ARCHITECTURE

May 2015

Architecture + Design Program
Department of Art, Architecture and Art History

**DESIGN OF A CHILDREN'S EVENT AND CULTURAL CENTER IN OSU,
ACCRA, GHANA**

A Thesis Presented

by

RUDI SOMUAH

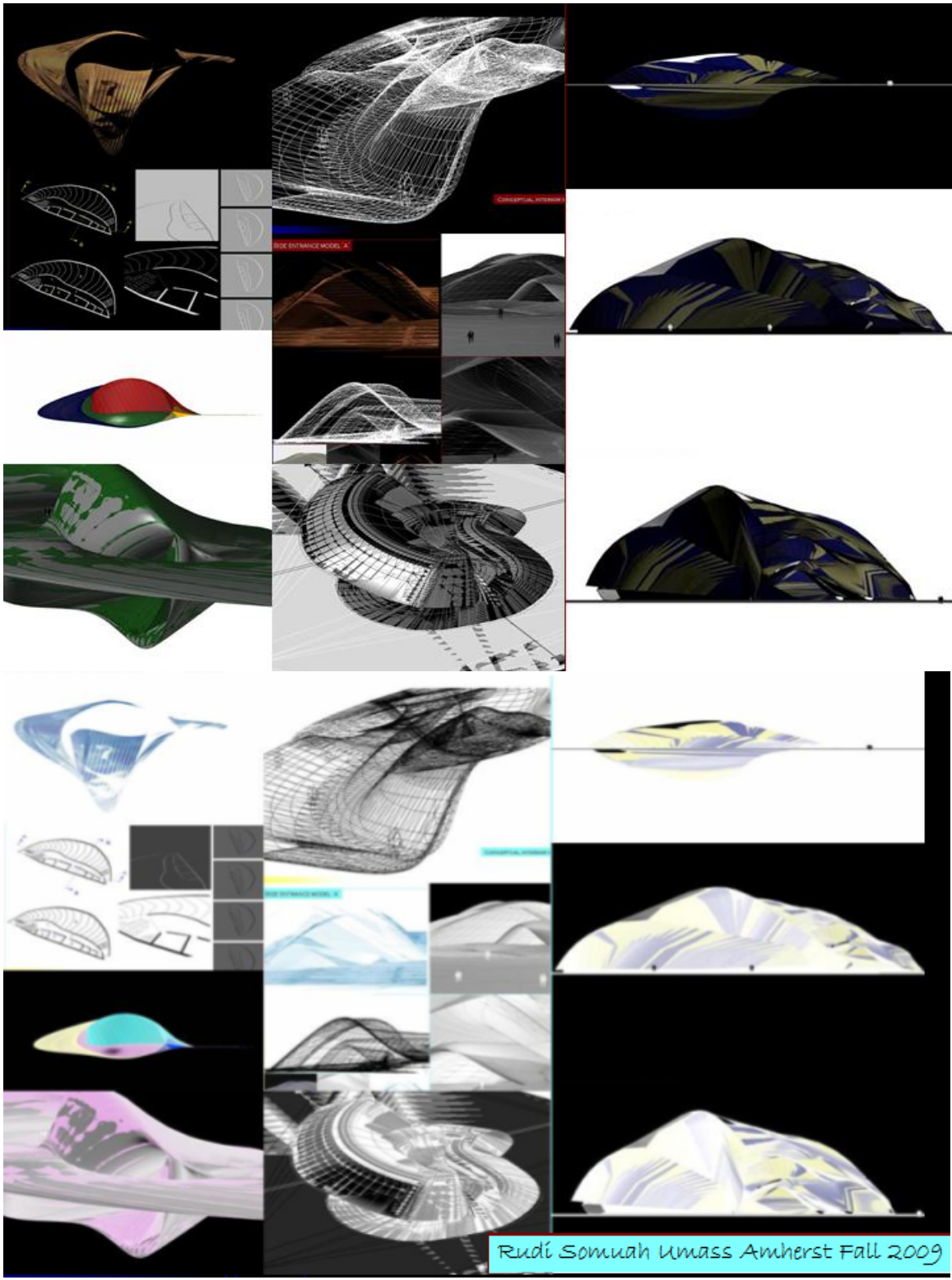
Approved as to style and content by:

Ray Mann, Chairperson

Skender Luarasi, Member

Frank Slegers, Member

Stephen Schreiber, Department Head
Department of Art, Architecture and Art History



Rudi Somuah Umass Amherst Fall 2009

ACKNOWLEDGEMENTS

I would like to express my profound appreciation to Ray Kinoshita Mann for her able supervision. I would also like to express my gratitude to Skender Luarasi and to Frank Slegers for their participation and input. Also, I would further like to acknowledge the unflinching support I received from my parents, Ferdinand Somuah and Gladys Nortey, throughout my stay at the University of Massachusetts Amherst. I thank my brothers Kofi, Frank and Lawrence, and also my sister Shirley for their support and encouragement. The support and inspiration from friends and colleagues, especially from Oscar Florez, have been invaluable.

To all the many others who assisted me in diverse ways during my stay at the University of Massachusetts Amherst and contributed to this study in particular that have not been mentioned above, I urge them not to feel left out. I will always remember them throughout my future endeavors.

ABSTRACT

DESIGN OF CHILDREN'S EVENT AND EXHIBITION CENTER IN OSU,

ACCRA, GHANA

MAY 2015

RUDI SOMUAH, B.S., KWAME NKRUMAH UNIVERSITY OF SCIENCE AND
TECHNOLOGY, GHANA

M.ARCH., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Ray Mann

Osu, a district in central Accra, Ghana, is known for its busy commercial enterprises, countless restaurants and vibrant nightlife. Osu remains prominent in Ghana and also globally for a variety of reasons. One of such reasons is that it is arguably Ghana's most contemporary setting; second to no other location in the entire country. Osu is also the site of Ghana's seat of government- The Colonial era Christiansburg Castle which houses the president's office and official residence. The town also plays host to several western diplomatic missions and embassies including the American Embassy.

In addition to its 5 star hotels, nightclubs and multiple drive-through restaurants, what really makes Osu prominent in Ghana and elsewhere is its multiple establishments for children, such as the Osu Children's Home, and its continued philanthropy towards the betterment of the plight of displaced and underprivileged children.

This thesis proposes and showcases the design of a children's event and cultural center in Osu; to celebrate and enhance its legacy of child philanthropy. Planning and

generative design aspects of the built artifact such as programming, site studies, and the collection of potentials for form generation, will be exhaustively addressed in this thesis.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iv
ABSTRACT	v
LIST OF FIGURES	ix
CHAPTER	
1. INTENT	1
Thesis statement	1
Specific purpose.....	1
Introduction.....	1
Background.....	2
Location/place.....	4
Accra, Ghana.....	6
Demographics	6
Economic development.....	7
Sanitation and solid waste.....	8
Economy- fishing.....	9
Culture - Recreational Drumming and Dancing, Festivals and Chieftaincy	10
Adinkra symbols	11
Geography	12
Natural resources	13
Low Plains	13
Volta basin	16
Upland-Ashanti.....	19
High Plains.....	20
Environment.....	20
Climate.....	21

Land Use	22
Case Studies/Precedence.....	27
Camouflage Architecture	27
Folding in Architecture	28
Countermarks Craters and Basin	31
Morphing.....	31
Collection of Potentials.....	32
2. PROGRAM.....	35
Sections	39
Floor Plan.....	40
Section through Site.....	41
Exterior Perspectives	43
Interior Perspectives.....	44
Contextual Drawings	45
BIBLIOGRAPHY.....	46

LIST OF FIGURES

Figure	Page
1 Osu, Ghana-selected settings and rituals.....	4
2 Oxford Street, Osu-Ghana	6
3 Selected images of Accra, Ghana	6
4 Adinkra Symbols	11
5 Volta Basin-Ghana	17
6 Volta Basin-Ghana.....	17
7 Accra: Existing Land use Map.....	23
8 Aerial view and map of proposed site.....	24
9 Site plan and image of site.....	25
10 Selected images of National Monuments and buildings Adjacent to the proposed Site.....	26
11 FOA, Virtual House 1997	27
12 Soweto Memorial Museum	29
13 Soweto Memorial Museum	29
14 Soweto Memorial Museum	30
15 Countermarks, Craters and Basin	31
16 Markos Novak, data driven forms.....	31
17 Songor Lagoon, Ghana	33

18 Wire frame/notation-Songor Lagoon- image by author	34
19 Program diagrams- image by author	35
20 Transformed program diagrams 1- image by author	36
21 Transformed program diagrams 2- image by author	37
22 The metaphor of the fishing net-model “A” - image by author	38
23 Section drawings of Children’s Center- image by author	39
24 Floor plans- image by author	40
25 Site plans- image by author	41
26 Sections through the site- image by author	41
27 Section through the site- image by author	42
28 Section through the site- image by author	42
29 Exterior perspectives- image by author	43
30 Exterior perspectives- image by author	43
31 Exterior perspectives- image by author	43
32 Interior perspectives- image by author	44
33 Interior perspectives- image by author	44
34 Interior perspectives- image by author	44
35 Contextual drawings-concept model and the Accra Stadium- image by author	45

CHAPTER 1

INTENT

Thesis Statement

The purpose of this thesis is to celebrate and emphasize the district of Osu in Accra, Ghana as a center for children and the affairs of children. This project and/or built artifact will bring together children from all corners of the district during brief periods to underscore and observe the legacy of Osu as a hub of children's activity.

Specific Purpose

To design a building for children in Osu, Ghana that can be shared by all children in the district irrespective of their background.

To provide a multi-purpose facility that can host or encourage a variety of activities centered on culture, learning, and recreation among children.

To add to the rich array of buildings within the historic and inspirational setting of the site which is located off starlets 91' street; which shares adjacencies with national monuments such as the Ghana Independence Square and the Independence Arch.

Thesis: Promoting the educational, cultural and physiological development of the children of Osu.

Introduction

Osu, a district in central Accra, Ghana, is known for its hectic commercial enterprises, innumerable restaurants and vivacious nightlife. Osu remains outstanding in

Ghana and also globally for a variety of reasons. One of such reasons is that it is debatably Ghana's most fashionable location; second to no other setting in the entire country. Osu is also the site of Ghana's seat of government- The Colonial era Christiansburg Castle which houses the president's office and official residence. The town also plays host to more than a few western diplomatic missions and embassies including the American Embassy. In addition to its 5 star hotels, nightclubs and multiple drive-through restaurants, what actually makes Osu prominent in Ghana and elsewhere is its multiple establishments for children, such as the Osu Children's Home, and its continued compassion towards the betterment of the predicament of displaced and underprivileged children. This thesis proposes the establishment of a building that sustains and enhances this legacy. Planning and design aspects such as programming, form generation and form transformation will be exhaustively addressed in this thesis.

Background

Ghana is situated on West Africa's Gulf of Guinea only a few degrees north of the Equator. Half of the country lies less than 152meters (500ft.) above sea level, and its uppermost point is 883meters (2,900ft.). The 537-kilometer (334-mi.) coastline is generally low sandy shore, backed by plains and scrub, and intersected by several rivers and streams, most of which are passable only by canoe.¹

A tropical rain forest belt, interrupted by heavily forested hills and many streams and rivers, extends northward from the shore, near the Ivory Coast frontier. This area, known as the "Ashanti," supplies most of the country's cocoa, minerals, and timber.

North of this belt, the country varies from 91 to 396 meters (300-1,300 ft.) above sea level and is carpeted by low bush, park like savanna, and grassy plains.²

The climate is tropical. The eastern coastal belt is warm and relatively dry; the southwest corner is hot and humid; and the north, hot and dry. There are two distinct rainy seasons in the south-May-June and August-September; in the north, the rainy seasons have a tendency to fuse. A dry, northeasterly wind blows in January and February. Annual rainfall in the coastal zone averages 83 centimeters (33 in.).³

The manmade Volta Lake stretches from the Akosombo Dam in southeastern Ghana to the town of Yapei, 520 kilometers (325 mi.) to the north. The lake generates electricity, facilitates internal transportation, and is a valuable resource for irrigation and fish farming. Ghana, a former British colony, shares borders on three sides with French Speaking African countries; Ivory Coast to the west, Burkina Faso to the north, Togo to the East and the Atlantic ocean to its south. Ghana has a tropical climate with a combination of hot, humid, warm and dry weather, and the country has nearly nine dominant ethnic groups and a minimum of fifteen languages and several other sub-dialects.⁴

After years of distress under British colonial rule, Ghana, known formerly as the Gold Coast, became the first African State south of the Sahara to achieve independence in 1957 under the stewardship of Kwame Nkrumah. Ghana was one of the richest countries in Africa prior its conquest by the British.⁵

Location/Place

Osu, a suburb of Accra, Ghana's capital, began as a small unplanned settlement for migrants from several regions in the country, as well as migrants from foreign countries such as Nigeria, Mali and Burkina Faso. It is a community that has always known modest economic means, a yearning for education for its youth and a lingering desire to increase opportunities for prosperity for its inhabitants. Today Osu is a vibrant urban enclave whose inhabitants are noted for their energy, small industry, fishing and their multiple establishments for children.⁶

Along the beaches, images of trains of people hauling in large amounts of fish in a single net define the area as a fishing outpost. Within the township itself, scenes of children playing soccer on dirt covered open spaces within haphazardly placed houses form part of the setting that is responsible for the town's unique character.



Figure 1: Osu, Ghana-selected settings and rituals

The temperature is almost constantly close to a hundred degrees in Osu, due to the effects of the unrelenting sun and the cloudless skies. Food vendors who predominantly

carry product in wood and glass box containers repeatedly yell for the attention of prospective customers. They sell everything from bottled iced water to egg and vegetable sandwiches. Within the township, cars thread on dirt road covered with painfully red and suggestively barren soil. Most households raise chickens and dwarf goats, which are reserved for special occasions, such as christenings, weddings, traditional festivals, and Christmas.⁷

The Ga ethnic group, the dominant ethnicity in the district, celebrate “homowo”, a harvest festival, which is marked by eating “kpekpele”, a meal made from corn and palm oil. Popular drinks include palm wine, made from the fermented sap of the palm tree, and home-brewed millet beer. Bottled European-style beer also enjoys popularity. Imported schnapps and whiskey have important ceremonial uses, such as for the pouring of libations for royal and family ancestors. When the rainy season comes in around June and July, there is misery and chaos as the heavy rains turn streets into streams of mud. On the main street, commonly referred to as Oxford Street, the scenes are far more contemporary. Taxi cabs busily conveying passengers from one end of the district to the next help define the sense of the place. Young men and women in fashionable western clothes can be seen at all times during the day, in front of fast food restaurants and department stores with friends and family.⁸



Figure 2: Oxford Street, Osu Ghana

Accra, Ghana



Figure 3: Selected images of Accra, Ghana

Demographics

Accra is the capital and the largest city in Ghana. The current regional population is 3 million and is projected to double every 15 years.⁹

- The growth rate for the Greater Accra region is 4.4% annually;
- 66% of Ghanaians live in the rural areas of the country;

- The current migration into the metropolitan area is 25,000 people per year;
- There are five major ethnic groups in Ghana: Akan 49.1%, Mole-Dagbani 16.5%, Ewe 12.7%, Ga-Adangbe 8%, Guan 4.4%;
- There is religious diversity in Accra: Christian 69%, Muslims 15.6%, and Traditional adherents 9%;
- 42% of people in Accra are under the age of 15;
- Life expectancy is 59.9 years for women and 56.2 years for men;
- The mean number of children born per household in Ghana is 6.2;
- The adult HIV prevalence rate is approximately 4%;
- The literacy rate for Ghana is 64.5%;
- There is a substantial gender gap between the literacy rates of women and men;
- About 3.3 million Ghanaians, or 32% of the population, have never been to school.¹⁰

Economic development

There has been a firm Gross Domestic Product growth of 3% to 5% annually since 1984, yet variable fiscal and monetary policies have created major inflation and indebtedness. The large information economy and lack of a reliable tax base does not ease these governmental financial challenges.¹¹

- Employment figures are skewed due to the fact that a large percentage of the population is young and are not yet of working age;
- Women comprise 49% of the labor force and are concentrated primarily in the service sector especially in wholesale and trade where they dominate (89%);

- The Ghanaian economy has fared comparatively well, but only relative to other African countries;¹²
- Exports consist largely of agricultural produce such as cocoa, gold, timber, tuna, bauxite and aluminum;
- The economy of Ghana depends heavily on internal trade;
- The largest sector of the economy is subsistence agriculture, which accounts for 36% of the national Gross Domestic Product, and more than half of the workforce (60%);
- In 2006, Ghana's industrial sector accounted for 25% of the Gross Domestic Product and 15% of the workforce;
- Ghana's political stability and English speaking population make Accra a potential economic center in the region.¹³

Sanitation and solid waste

With limited governmental resources, it is very difficult to sustain standard and effective sanitation and solid waste cleaning and removal. Two of the most urgent concerns regarding sanitation and solid waste management are health risks and flood exacerbation due to clogged water ways. In central Accra, major health problems are diseases caused by poor environmental hygiene; compounded by poverty and the lack of health education information.¹⁴

- Solid waste collection and haulage was privatized and contracted out to 15 different companies starting in 1997;
-

- House-to-house garbage collection is most prevalent in high-income communities, costing between 15,000 to 40,000 cedi per month for weekly collection, accounting for only 11% of the population;
- The remaining population, 89%, disposes of their waste at community dumps, in open spaces, in water bodies, and in storm drainage channels;
- Approximately 1,250 tons of solid waste is collected daily;
- 10% to 15% of solid waste collected in Accra is composted.¹⁵

Economy-fishing

Historically, the district of Osu in Accra has always been a fishing community. Income generated from the harvesting and sale of fish along the shoreline of the Atlantic Ocean has supported the community since its formation. Today, advancement in science and technology have led to the development of varied advanced occupations and industries such as the Ghana Stock Exchange market, multiple hospitality establishments such as the La Palm Royal Beach Hotel and the Golden Tulip Hotel, banking and other financial institutions are commonplace in Osu, Transportation and other logistic based industries also form the backbone of a local economy that is contemporary and yet also retains aspects that can be regarded as primitive.¹⁶

In 1997, the marine fisheries accounted for about 85% of the total annual fish production. The four categories of fleets that work in the area are: Artisan (canoe), Inshore/semi industrial, Deep-sea/industrial and Tuna fleets. The Artisan fishery has

wooden dugout canoes operating from 293 landing beaches. There are about 101,700 fishermen and 150,000 processors and traders. There are 8,895 canoes, of which 56.2% are motorized. The sector produces between 70% and 80% of the total annual marine catch and accounts for over 95% of the annual landings of about 250,000mt of small pelagic. The major species exploited are anchovy, sardinella, mackerels and burrito.¹⁷

The inshore fleet consists of locally built wooden vessels using inboard engines. They are between 8.2m and 37m long and are used for purse seine during the major and minor seasons, and trawling during the off season. The number of vessels has been diminishing due to the decline in profits which has resulted from lack of fishery resource for exploitation and high cost of operation and maintenance. The types of fish mainly exploited by the inshore fleet are sardinella, mackerels and burrito. The deep-sea fleet consists of imported steel vessels used for trawling and for catching shrimp. These vessels are more than 35m long and have engines of more than 600hp.¹⁸

Culture - Recreational Drumming and Dancing, Festivals and Chieftaincy

Most cultural performances occur in the context of traditional religious and political rites, which involve intricate drumming and dancing. While these are organized by trained performers, a strong emphasis on audience participation is maintained. Modern developments have encouraged the formation of professional dance troupes, who perform on public occasions, at international festivals, and in theaters and hotel lounges. The University of Ghana is the home of the Ghana Dance Ensemble, a national institution

with an international reputation. More popular modern forms focus on high life music, a samba-like dance style, which is played in most urban nightclubs.¹⁹

Adinkra symbols

The Adinkra symbols express various themes that relate to the history, beliefs and philosophy of the Ghanaian people. They mostly have rich proverbial meaning since proverbs play a very important role in the Ghanaian culture. The use of Proverbs in daily discourse is perceived as a symbol of wisdom. Other Adinkra symbols are used to depict historical events, human behavior and social attitudes.²⁰

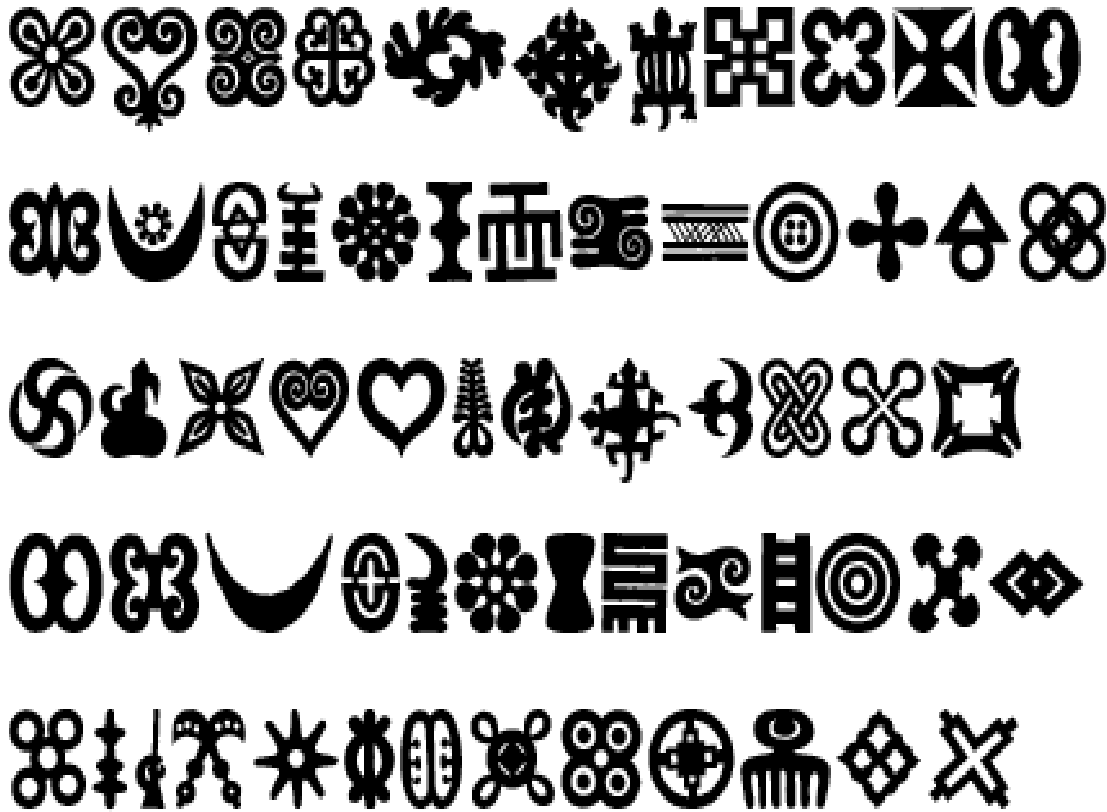


Figure 4: Adinkra Symbols

Geography

Area: total: 238,540 sq km, land: 230,020 sq km, water: 8,520 sq km.

Ghana is characterized in general by low physical relief. Undeniably, the Precambrian rock system that underlies most of the nation has been worn down by erosion almost to a plain. The highest elevation in Ghana, Mount Afadjato in the Akwapim-Togo Ranges, reaches merely 880meters above sea level.²¹

There are, nonetheless, five distinct geographical regions. Low plains stretch across the southern part of the country. To their north lie three regions--the Ashanti Uplands, the Akwapim-Togo Ranges, and the Volta Basin. The fifth region, the high plains, occupies the northern and northwestern sector of the country. Like most West African countries Ghana has no natural harbors; since strong surf pounds the shoreline. Two artificial harbors were built at Takoradi and Tema (the latter completed in 1961) to house Ghana's shipping needs.²²

Natural resources

- gold
- timber
- industrial diamonds
- bauxite
- manganese
- fish

- rubber
- hydropower

Low Plains

The low plains encompass the four sub regions of the coastal savanna, the Volta Delta, the Accra Plains, and the Akan Lowlands. A narrow strip of grassy and scrubby coast runs from an obscure location near Takoradi in the west to the Togo border in the east. This coastal savanna, only about eight kilometers in width at its western end, stretches eastward through the Accra Plains, where it widens to more than eighty kilometers, and ends at the southeastern corner of Ghana at the lower end of the Akwapim-Togo Ranges.²³

Almost entirely flat with no prominent features, the Accra Plains tumble down steadily to the Gulf of Guinea from an altitude of about 150meters. The topography east of the city of Accra is marked by a sequence of ridges and spoon shaped valleys. The hills and slopes in this area are the preferred lands for cultivation. Shifting cultivation is the choice agricultural practice due to the swampy nature of the low lying areas during the wet seasons and the intermittent obstruction of the rivers at the coast by sandbars that form lagoons. A plan to irrigate the Accra Plains was announced in 1999. Should this plan come to fruition, much of the area could be opened to large-scale cultivation.²⁴

To the west of Accra, the low plains contain wider valleys and rounded low hills, with infrequent rocky headlands. In general, however, the land is flat and covered

with grass and scrub. Thick groves of coconut palms define the coastline. Several commercial districts, like Winneba, Salt pond, and Cape Coast, are located in this region. Although Winneba has a small livestock industry, the predominant occupation of the coastal inhabitants is fishing by dug-out canoe.²⁵

The Volta Delta, which forms a distinct sub region of the low plains, extends into the Gulf of Guinea in the farthest southeast. The delta's rock formation--consisting of thick layers of sandstone, limestone, and silt deposits--is flat, and relatively recent. As the delta expanded over several centuries, sandbars developed across the tip of the Volta and smaller rivers that empty into the gulf in the same area, forming several lagoons, some quite large, making road construction complex. To avoid the lowest-lying areas, for instance, the road between Accra and Keta makes an unusual detour inland just before reaching Ada and finally makes an approach for Keta from the east along the narrow spit on which the town stands. By 1989 it was estimated that more than 3,000 houses in the district had been submerged by flooding from the Keta lagoon. Additionally, about 1,500 other houses were destroyed by erosion caused by the powerful sea waves.²⁶

Ironically, it is this flat, silt-composed delta region with its profusion of water that supports shallot, corn, and cassava cultivation in the region. More so, the sandy soil of the delta gave rise to the copra industry. Salt-making, from the abundant supply of salt from dried lagoons beds, provides additional employment. The main occupation of the

delta people, however, continues to be fishing, an industry that supplies dried and salted fish to other parts of the country.²⁷

The largest part of the low plains is the Akan Lowlands. Some experts prefer to classify this region as a subdivision of the Ashanti Uplands because of the many characteristics they share. Unlike the uplands, however, the height of the Akan Lowlands is generally between sea level and 150meters. Some ranges and hills rise to about 300meters, but few exceed 600meters.²⁸

The Akan Lowlands hold the basins of the Densu River, the Pra River, the Ankobra River, and the Tano River, all of which play significant roles in the economy of Ghana. The Densu River Basin, location of the important urban centers of Koforidua and Nsawam in the eastern lowlands, has an undulating topography. Many of the hills here have stony summits, which give a striking appearance to the landscape. The upper section of the Pra River Basin, to the west of the Densu, is relatively flat; the topography of its lower reaches, however, imitate that of the Densu Basin and is a rich cocoa and food-producing region. The valley of the Birim River, one of the main tributaries of the Pra, is the country's most important diamond-producing area.²⁹

The Ankobra River Basin and the middle and lower basins of the Tano River to the west of the lowlands form the largest subdivision of the Akan Lowlands. Here annual rainfall between 1,500 and 2,150millimeters helps sustain a dense forest cover. In addition to timber, the area is rich in precious minerals. The Tarkwa goldfield, the

diamond operations of the Bonsa Valley and high-grade manganese deposits are all prominent in this region. The middle and lower Tano basins have been intensely explored for oil and natural gas since the mid-1980s. The lower basins of the Pra, Birim, Densu, and Ankobra rivers are also sites for palm tree cultivation.³⁰

Volta Basin

Located in the central part of Ghana; the Volta Basin blankets about 45 percent of the nation's total land surface. Its northern section, which lies above the upper part of Lake Volta, soars to a height of 150 to 215 meters above sea level. Elevations of the Konkori Scarp to the west and the Gambaga Scarp to the north have altitudes between 300 to 460 meters. To the south and the southwest, the basin is less than 300 meters in height. The Kwahu Plateau marks the southern end of the basin, although it forms a natural part of the Ashanti Uplands.³¹



Figure 5: Volta Basin-Ghana



Figure 6: Volta Basin-Ghana

The basin is characterized by poor soil, generally of Volta sandstone. Annual rainfall ranges between 1,000 and 1,140 millimeters. The most prevalent vegetation type

is savanna, the woodlands of which, depending on local soil and climatic circumstances, may have such trees as Red Ironwood.

The basin's population comprises of mostly farmers, particularly in the central and northwestern areas of the basin, where tsetse flies are common. Archeological finds indicate, however, that the region was once more heavily populated. Periodic burning evidently occurred over extensive areas for perhaps more than a millennium, exposing the soil to excessive drying and erosion, rendering the area unattractive to prospective cultivators.³²

In contrast with the rest of the region are the Afram Plains, located in the southeastern corner of the basin. In this area the terrain is low; averaging 60 to 150 meters in elevation, and annual rainfall is between 1,140 and about 1,400 millimeters.

By the Afram River, much of the surrounding countryside is flooded or swampy during the rainy seasons. With the construction of Lake Volta (8,515 hectares in surface area) in the mid-1960s, much of the Afram Plains was submerged. Despite the construction of roads to tie communities displaced by the lake, road transportation in the region remains poor. Sustained efforts to improve communications; enhance agricultural production and to improve standards of living began only in the mid-1980s.³³

Uplands-Ashanti

Consisting of the Southern Ashanti Uplands and the Kwahu Plateau, the Ashanti Uplands are situated north of the Akan Lowlands and stretch from the Ivory Coast border in the west to the raised tip of the Volta Basin in the east. Extended in a northwest-to-southeast direction, the Kwahu Plateau spans 193kilometers between Koforidua in the east and Wenchi in the northwest. The mean elevation of the plateau is close to 450meters, rising to a maximum of 762meters. The comparatively cool temperatures of the plateau were attractive to Europeans, particularly missionaries, who founded many prominent secondary schools and colleges in this region.³⁴

The plateau forms one of the important climatic divides in Ghana. From its northeastern slopes, the Afram and Pru Rivers flow into the Volta River, while from the opposite side, the Pra, Birim, Ofin, Tano, and other rivers flow south toward the sea. The plateau also sets the northernmost limit of the forest zone. Although large areas of the forest cover have been damaged through farming, substantial deciduous forest remains to shade the head waters of the rivers that flow from the plateau.

The Southern Ashanti Uplands, extending from the foot of the Kwahu Plateau in the north to the lowlands in the south, slope gently from an elevation of about 300meters in the north to about 150meters in the south. The region, however, showcases several hills and ranges as well as several towns of historical and economic prominence, including Kumasi, Ghana's second largest city and former capital of the Asante Empire. Obuasi and Konongo, two of the country's most prominent gold-mining districts, are also

located in this region. The area is the country's lead producer of cocoa, and its tropical forests continue to be an important source of timber for the lumber industry.³⁵

High Plains

The general terrain in the northern and northwestern part of Ghana outside the Volta Basin consists of a dissected plateau, which averages between 150 and 300 meters in height and, in some places, seems even higher. Rainfall averages between 1,000 and 1,150 millimeters annually. Soils in the high plains are more fertile than those in the Volta Basin, and the population density is considerably higher. Grain and cattle production are the foremost economic activities in the high plains of the northern region. Since the mid-1980s, when former United States President Jimmy Carter's Global 2000 program adopted Ghana as one of a select number of African countries whose local farmers were to be educated and financially sustained to improve agricultural production, there has been a dramatic boost in grain production in northern Ghana.³⁶

Environment

Recent drought in northern Ghana has severely affected agricultural activities; deforestation; overgrazing; soil erosion; poaching and habitat destruction continually threatens wildlife populations. Other problems include water pollution; inadequate supply of drinking water and the wanton disposal of refuse to mention only a few.³⁷

Climate

The country's warm, humid climate has an annual mean temperature between 26°C and 29°C. Variations in the chief elements of temperature, rainfall, and humidity that oversee the climate are influenced by the movement and interaction of the dry tropical continental air mass, or the harmattan, which blows from the northeast across the Sahara, and the opposing tropical maritime or moist equatorial system. The cycle of the seasons follows the movement of the sun back and forth across the equator.³⁸

During summer in the northern hemisphere, a warm and moist maritime air mass intensifies and pushes northward across the country. A low-pressure belt, leads to warm air, rain, and intense monsoon winds from the southwest. As the sun returns south across the equator, the dry, dusty, tropical continental front, or harmattan, prevails.

Climatic conditions across the country are scarcely uniform. The Kwahu Plateau, which marks the northernmost extent of the forest area, also serves as an important climatic partition. To its north, two distinct seasons occur. The harmattan season with its dry, hot days and moderately cool nights from November to late March or April, is followed by a wet period that attains its peak in late August or September. To the south and southwest of the Kwahu Plateau, where the annual mean rainfall from north to south ranges from 1,250 millimeters to 2,150 millimeters, four distinct seasons occur. Heavy rains fall from about April through late June. After a relatively short dry period in August,

another rainy season begins in September and lasts through November, before the longer harmattan season sets in to complete the cycle.³⁹

The degree of drought and rainfall differs across the entire country. To the south of the Kwahu Plateau, the heaviest rains occur in Axim; in the southwest corner of Ghana. Farther to the north, Kumasi records an average annual rainfall of about 1,400 millimeters, while Tamale in the drier northern savanna receives rainfall of 1,000 millimeters per year. From Takoradi eastward to the Accra Plains, including the lower Volta region, rainfall ranges between 750 millimeters to 1,000 millimeters a year.

Temperatures are usually high all year long throughout the country. At higher elevations temperatures are more tolerable. In the far north, temperature highs of 31°C are common. The southern part of the country is affected by generally humid conditions. This is particularly so at night, when 95 to a 100 percent humidity is achievable. Humid conditions also prevail in the northern sections of the country during the rainy season. During the harmattan season, however, humidity drops as low as 25 percent in the north.⁴⁰

Land Use

Much of the existing land use is overseen by an obsolete and ineffective land tenure system. This structure has led to haphazard and dangerous development patterns, already affected by rapid population growth. The Accra metropolitan area is approximately 36 miles from east to west, and 18 miles from north to south. The City of

Accra lies on the Gulf of Guinea, in a tropical climate zone. The topography is basically flat, with a gently rolling land surface.⁴¹

- Non-agricultural land use within the Accra metropolitan area is largely residential;
- Commerce often exists within residential areas creating a “mixed-use” pattern;
- There are several commercial central business districts, all within the core of the city;
- Industry is currently limited to the western and eastern ends of the metropolitan area;
- The most current land use plan for the city was prepared in 2005, although it was not formally adopted or implemented;
- The rapid expansion the city experiences today takes place without any particular pattern.⁴²

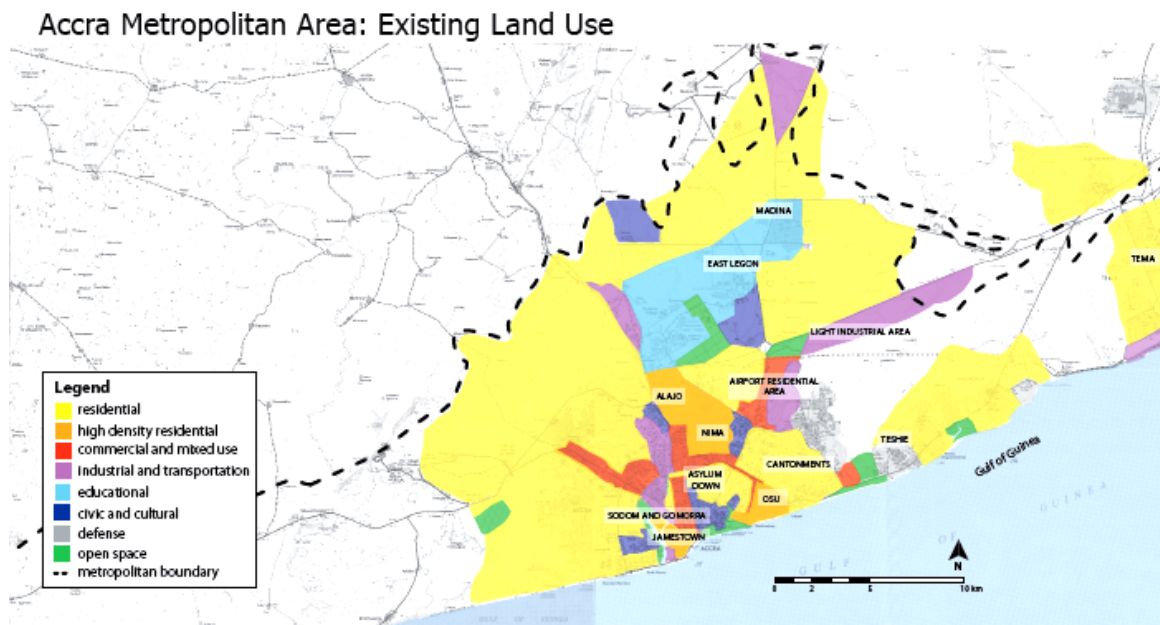


Figure 7 Accra: Existing Land use Map

The proposed building construction site is located off Starlets 91 Street in Osu, Accra, Ghana, close to several national monuments and has a view toward the Atlantic Ocean.



Figure 8: Aerial view and map of proposed site

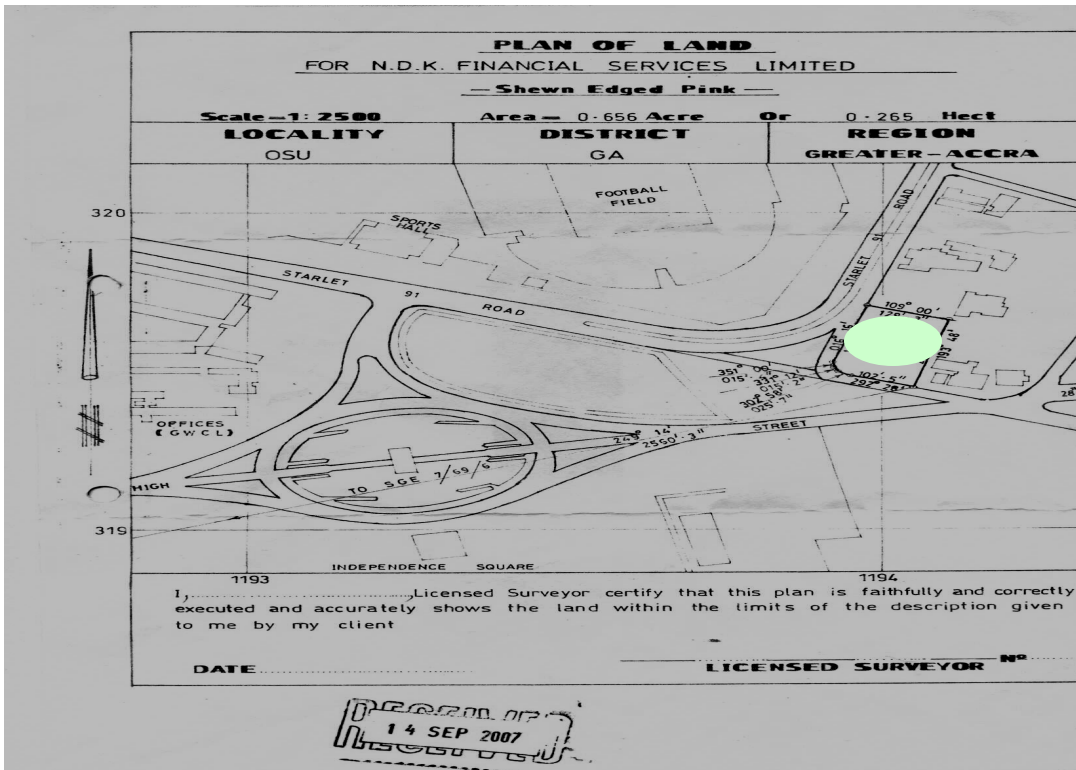


Figure 9: site plan and image of site



Figure 10: Selected images of National Monuments and buildings Adjacent to the proposed Site

Case Studies/Precedence

Camouflage Architecture

Camouflage is attained by a cautious manipulation of reality: A synthetic mapping of its most noticeable forms transformed into abstract schemes capable of interacting with the environment. Camouflage architecture consists of: buildings that are designed to hide behind or within their own shadows; and are specifically intended to be as inoffensive and indistinguishable as possible so as to avoid close inquiry or disapproval. Difficult to focus on for any extended period of time, their true magnitude is only fully visible when viewed through peripheral vision.⁴³



Figure 11: FOA, Virtual House 1997

It is based on a strategic disbanding of the article centered on the blurring of its silhouettes and the ending of its former somber presence. This is however not related to a possible inclination toward inert invisibility-realized through concealment. It should alternatively be regarded as a decision to place the utmost confidence in the non-absolute, vague or dependent, with the aim of responding to established contextual demands through non definitive mechanisms of synthesis and transfusion.⁴⁴

Folding in Architecture

Folding in architecture is a method of design where buildings grow from the unfolding of land, materials and spaces into uninterrupted form. A folding is a landscape within a landscape; an undulation and a deformation of the programming layers which are stationed at random. Example: Soweto Memorial Museum- François Roche

The Soweto thoroughfare, which is a whole lot more than an axis running through the township, was the route of the children's march in 1976, bloodied by the death of one of the children, Hector Peterson, who was buried on the spot, at the site symbolically chosen for the Memorial Museum. So that research into events linked with the African National Congress could be undertaken at the actual place where they unfolded, the township archives have been incorporated within the Memorial Museum's floor plan. Using this type of construction, the aim was thus to offer the land and the subsoil beneath it to the mining population whose sole task was to dig up the ore (gold), by opting to make use of the nature already present on the site, and to retain its stripped aspect opposite the Peterson's tombstone. Roche, DSV & Sie.P came up with a buried project from which there emerged, in the midst of the bush, transparent volumes of glass which convey the depth of a stratum that makes light of the relief, and houses the archives, lecture halls and exhibition rooms, all on just one level.⁴⁵

- 1) Undulation of the skin of the bush (burn high vegetation by the sun for preserving the tombstone and its destitution).
- 2) Deformation of the programming layers according to this movement (basement)
- 3) Random positioning of the glass containers emerging from the bush tablecloth (referring to the usual township installations done by ship containers).⁴⁶

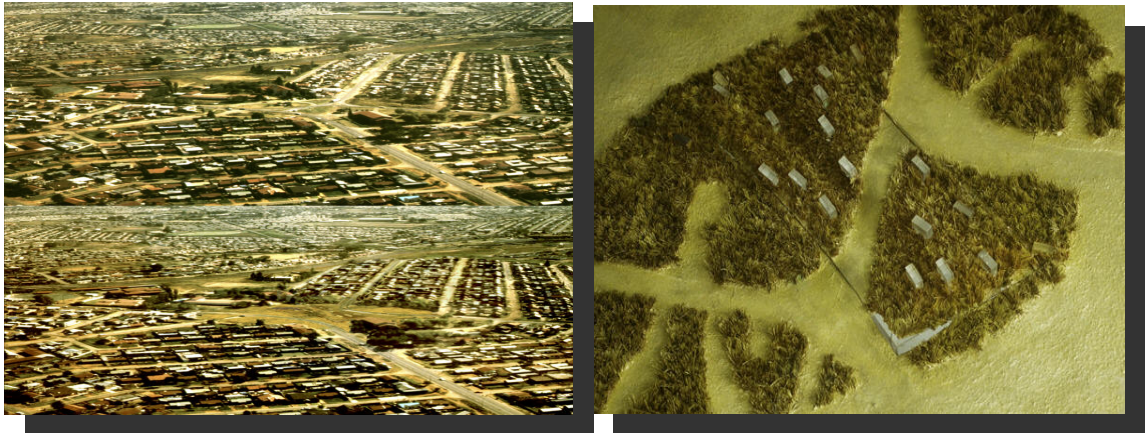


Figure 12 Soweto Memorial Museum

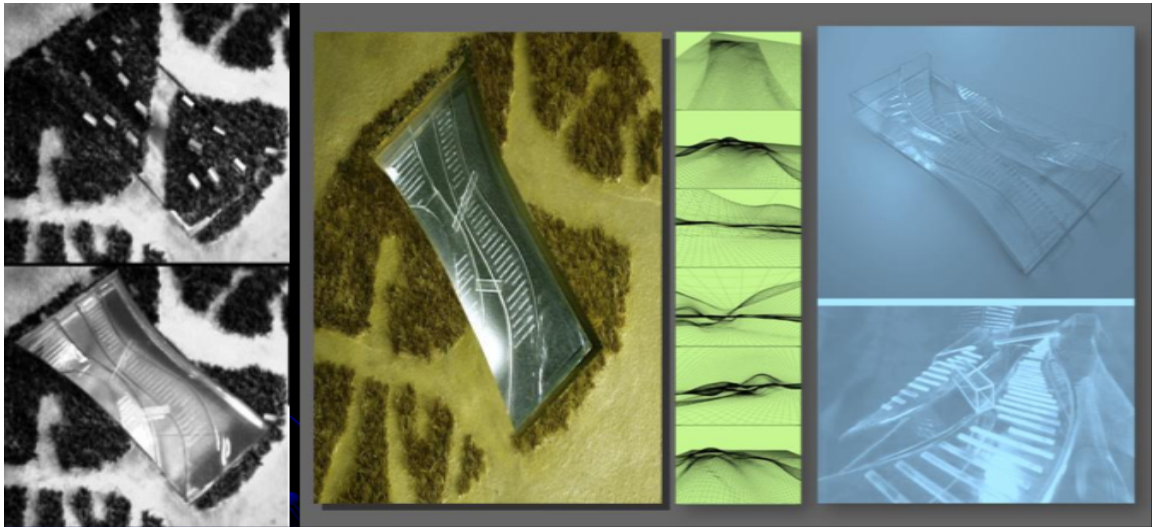


Figure 13 Soweto Memorial Museum

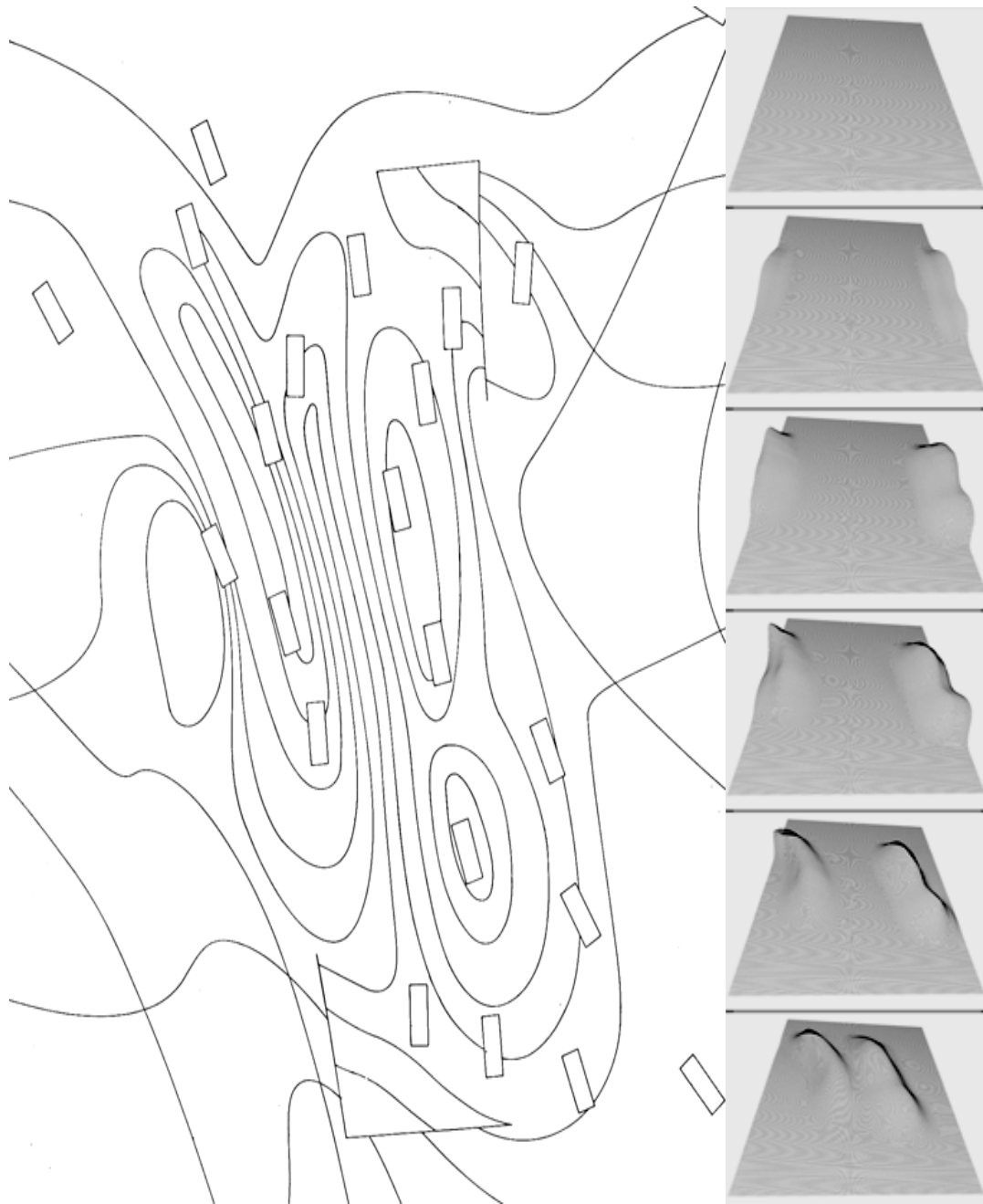


Figure 14: Soweto Memorial Museum

Countermarks: Craters and Basin

They are active landscapes in the shape of a vessel or central cavity;
Architectural manipulations of the existing topography in depression or depth or holes of activity.⁴⁷



Figure 15: Countermarks: Craters and Basin

Morphing

A Collage only superimposes material from different context, morphing functions through them; blending them. A collage is mechanical, whereas morphing is alchemical.



Figure 16: Markos Novak, data driven forms

Morphing has a hereditary disposition, not surgical, more like inherent cross breeding than transplanting. Collages enhance distinctiveness by recontextualising that which is recognizable, whereas morphing merges the unusual in ways that highlight unexpected similarity.⁴⁸

Collection of Potentials

Collection of bits and pieces of information, in the form of data, pixels, graphs to mention only a few, formed the basis of form generation through a process of repetitive transformation of notated phenomenon observed either on the site or in the surrounding contexts that formed the essence and totality of Osu, Accra-Ghana.

The geography or geology of the region yielded the most effective results in terms of supplying the basic provocation or curiosity for simple notation. The Korle lagoon, the Songor lagoon and Lake Bosomtwi bore simple results in simple notation, yet led to breath taking results after only a few attempts at transformation and deformation.

The prime methods of deformation and transformation employed included shearing, non uniform scaling, twisting, and undulating, superimposing, folding and bending to mention only a few.

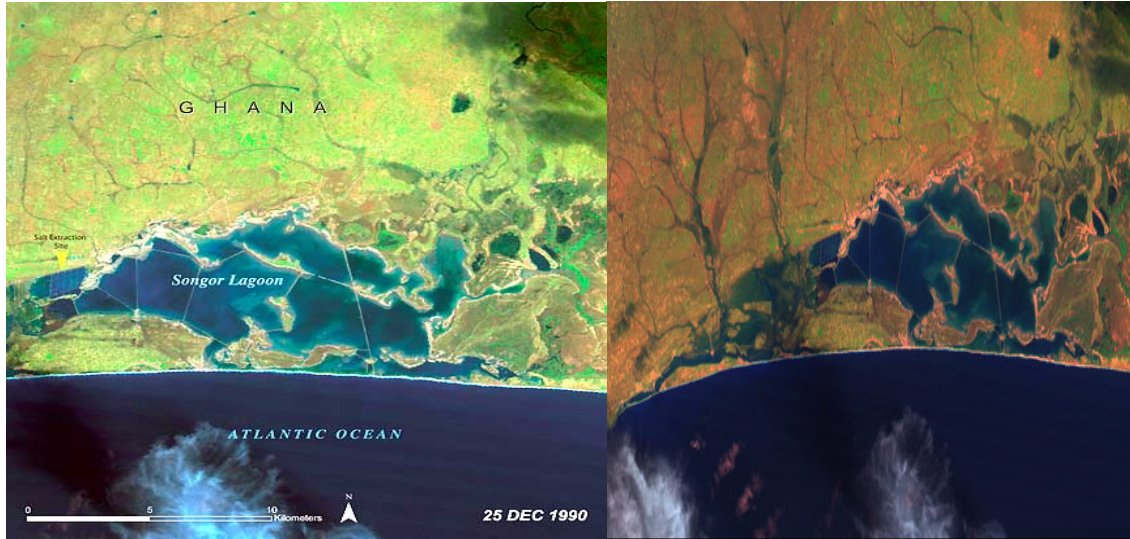


Figure 17: Songor Lagoon, Ghana

The initial efforts at manipulation were done solely in wire frame by intertwining simple two dimensional forms in the generation of complex meshes that were inherently suggestive of different forms of architectural character and effect. Yet to a large extent due to the wire-frame's overwhelmingly feebly nature, that effect remained too subtle to influence a certain or firm design/architectural language/direction in the path toward designing a facility for children in the district of Osu in Accra, Ghana.

Applying flesh to ambiguous wire frames and/or meshes through architecturally transformative tools and methods such as lofting, sweeping, extruding and scaling; uniform and non-uniform, offered a sense of greater definition to previously anemic forms. The application of this particular principle to the wire-frames generated from the transformation and deformation of the notated diagrams derived from the Songor Lagoon in Ghana led to the generation of the initial 3dimensional form that yielded a clear path in terms of language or architectural translation, which led ultimately to the design of the children's center in Osu.

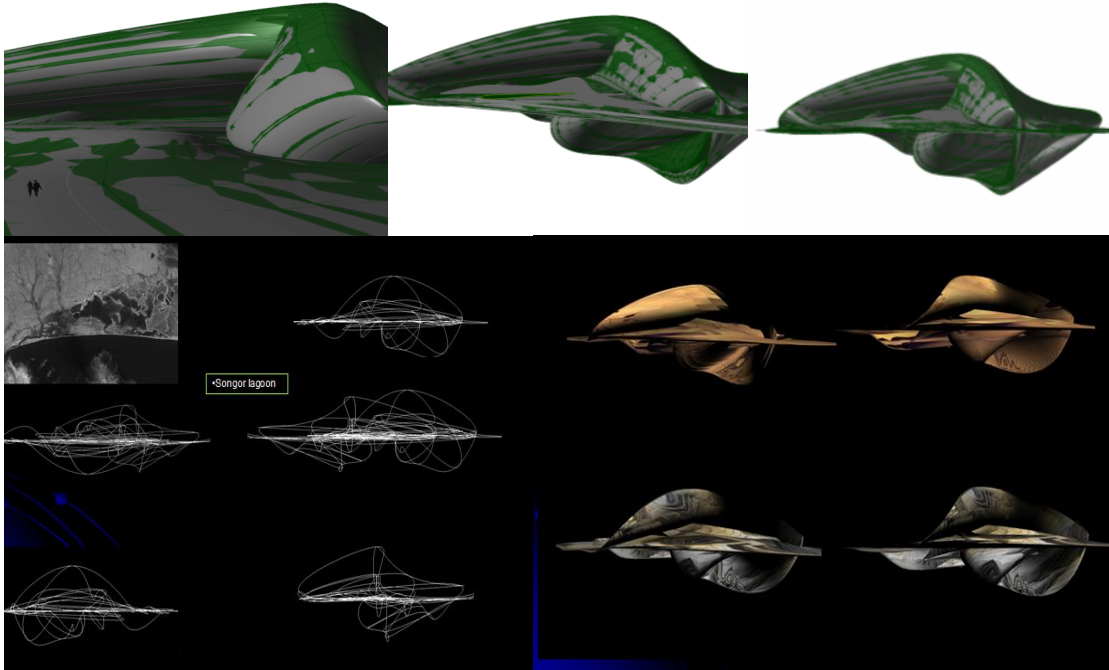


Figure 18: wire frame/notation-Songor Lagoon

Due to the overwhelming influence of the geography of Osu in the derivation of form for the project, the event for the design or the theme of the project was set as: topography.

CHAPTER 2

PROGRAM

The newly generated 3dimensional form, though unusual, had several inherent suggestions which included the notion of subterranean enclosure or inhabitation. It had overt openings, and seemed to fold onto itself in several instances. It had a curvilinear appearance that seemed geographic or even biological. This notion on subterranean habitation is not uncommon to the district of Osu and its environs. Several homes in the region contain basement dwellings. The Korle lagoon in Accra, which is in essence a dead lagoon, bores several feet into the ground and has no water running through most sections of it. Migrants from Ghana’s rural communities who move to Accra, Ghana’s capital in search of greener pastures established make shift homes within the lagoon itself, since they were unable to find affordable housing elsewhere within the city. The township of Old Fadama in Accra, is an entire migrant community that has its houses within and along the banks of the Korle lagoon.

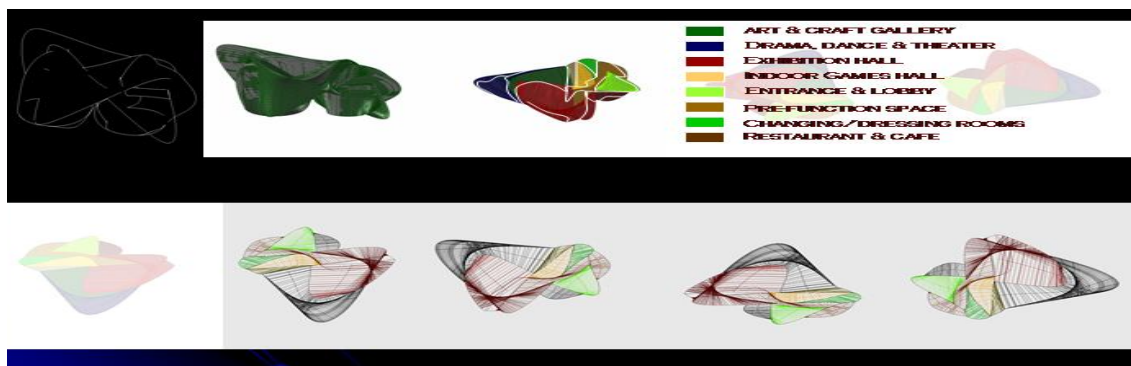


Figure 19: Program diagrams

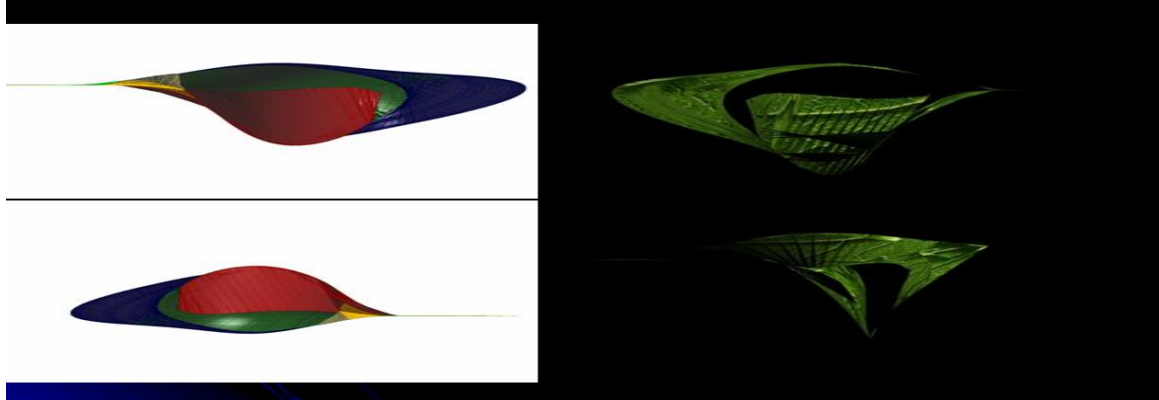


Figure 20: transformed program diagrams 1

A two dimensional form was derived from the 3dimensional concept model that was obtained from the transformation of the notation obtained from the Songor lagoon. Subsequently, the various programmatic elements of the building were color coded and assigned to different portions of the two dimensional model to create an impression of discrete program elements in a diagram format. Some of the programs included: art and craft gallery, drama and dance instruction, exhibition hall, indoor games, entrance and lobby to mention only a few.

The diagram that was obtained showcased the varied program elements in their assigned positions. Using the same processes of transformation and deformation, the program diagram was transformed multiple times to arrive at several different kinds of program arrangement and also completely new forms most of which possessed an almost entirely new architectural character or identity.

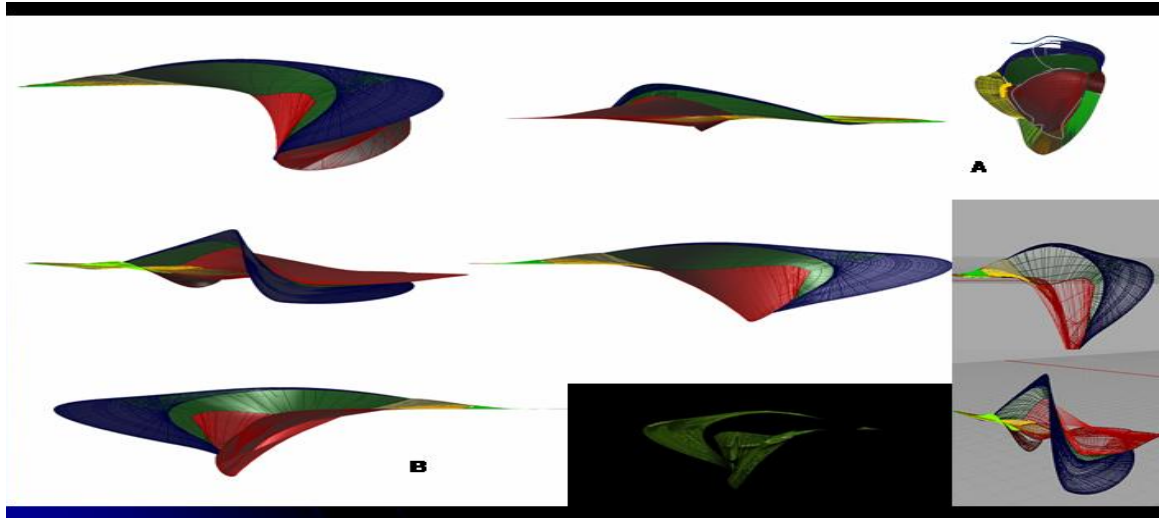


Figure 21: transformed program diagrams 2

Two of the resultant forms, set aside due to their perceived superiority in terms of character, determined the remainder of the design project. Form “A” and form “B” had properties-geological/topological, alluvial, ambiguous and provocative- that made them particularly appropriate for the design of the children’s event and cultural center in Osu. Further exploration and suggestive renderings of both forms, on the interior, as well as suggested exterior renderings, pointed to the slight superiority of form “B” in terms of its suitability for the intended project. Though subjective in nature, a design choice was nonetheless made in favor of form “B”.

Form “B” had of two conspicuous properties, aside from its plethora of inherent yet less noticeable aspects or properties. Specifically, it had a concave side and a convex side. Using the fishing net and its ability to expand, contract, and envelope, as a metaphor, form “B” was pushed and pulled in different areas in order to attain a greater suggestion of a building. The concave side of the form was simply embellished to create volume,

while the convex side saw some mild morphing or transformation as well and ultimately became the southern façade of the building.



Figure 22: The metaphor of the fishing net-model “A”

The remainder of the project, which had been merely a sketch up to this point, centered on deriving more detailed drawings of the project such as plans and sections, in order to be able to fully grasp how the building unfolded itself in space and related to its context or surroundings.

Since the program was an event and exhibition center, the need for a large exhibition space was paramount. Yet, such a space would also need auxiliary or support spaces in order to function efficiently. There was a desire to avoid an instance where the utility spaces will destroy the openness of the design; and unflatteringly, blanket the space that had been assigned to the intended events or exhibitions. A design choice was ultimately made, after several explorations of varied options, to enclose all auxiliary spaces in a pouch that was accidentally discovered on the interior wall of the southern façade. Ultimately, this pouch took on the character of a cantilever, which had spaces such as an art gallery, restrooms, and dance halls with mezzanine floors, enclosed within

it, all of which had views to the central event space. The section drawings that follow depict this choice very clearly.

Sections

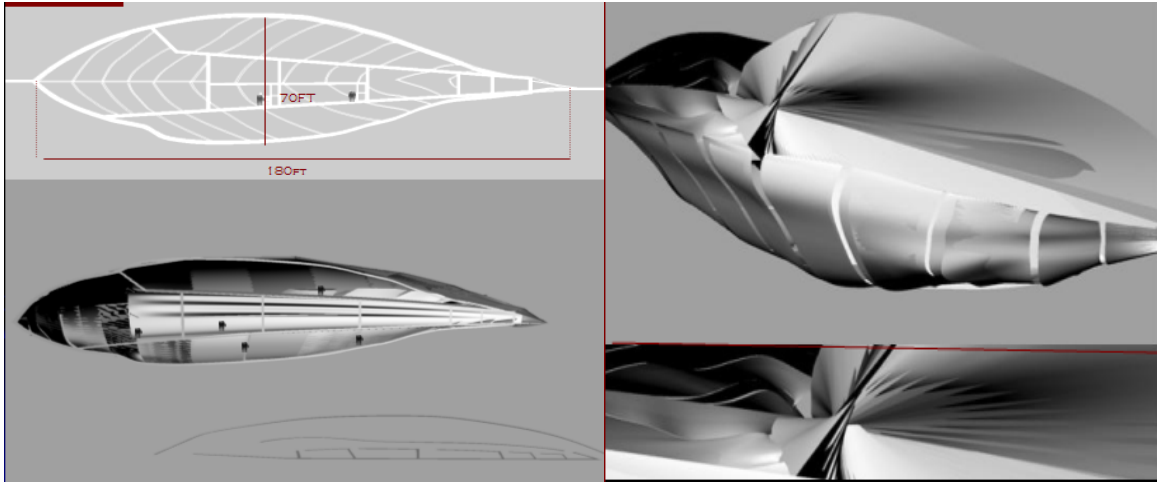


Figure 23: Section drawings of the Children's Center

The boomerang shaped floor plan of the Children's Center was derived two dimensionally from form "B" and has spaces such as the: 1- art gallery 2- meeting area 3- dance instruction 4- drama instruction 5- event & exhibition space.

Floor Plan

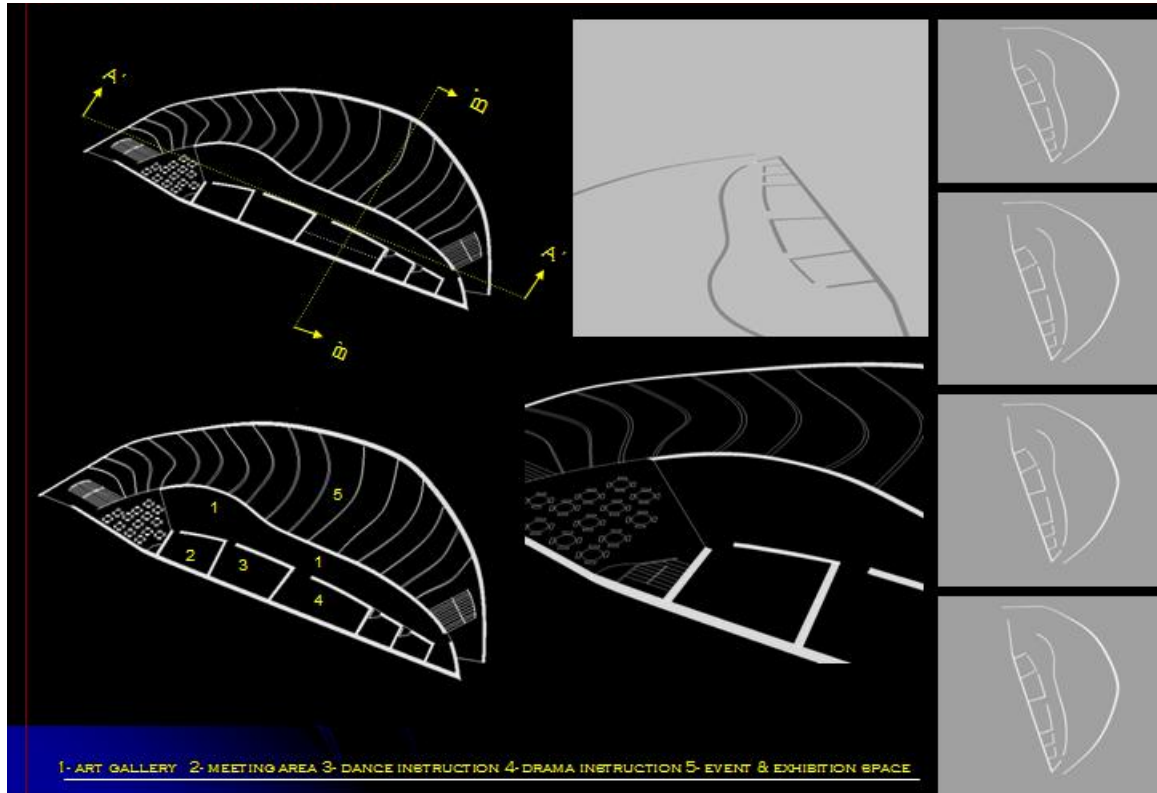


Figure 24: floor plans

The site which had been level was sculpted to avoid an instance where the building would simply sit on a flat surface like a “mouse on a table”. The intent was to work the building into the site in order to achieve a harmonious blend between building and site. A raised platform of earth facing the main road, opposite the Accra Sports Stadium, had a bus shelter underneath to shield transit pedestrians from harsh or inclement weather. Trees were planted around the edge of the site for definition and distinction between the site and the neighboring community. The site plan and site sections below depict these design choices in graphic detail.

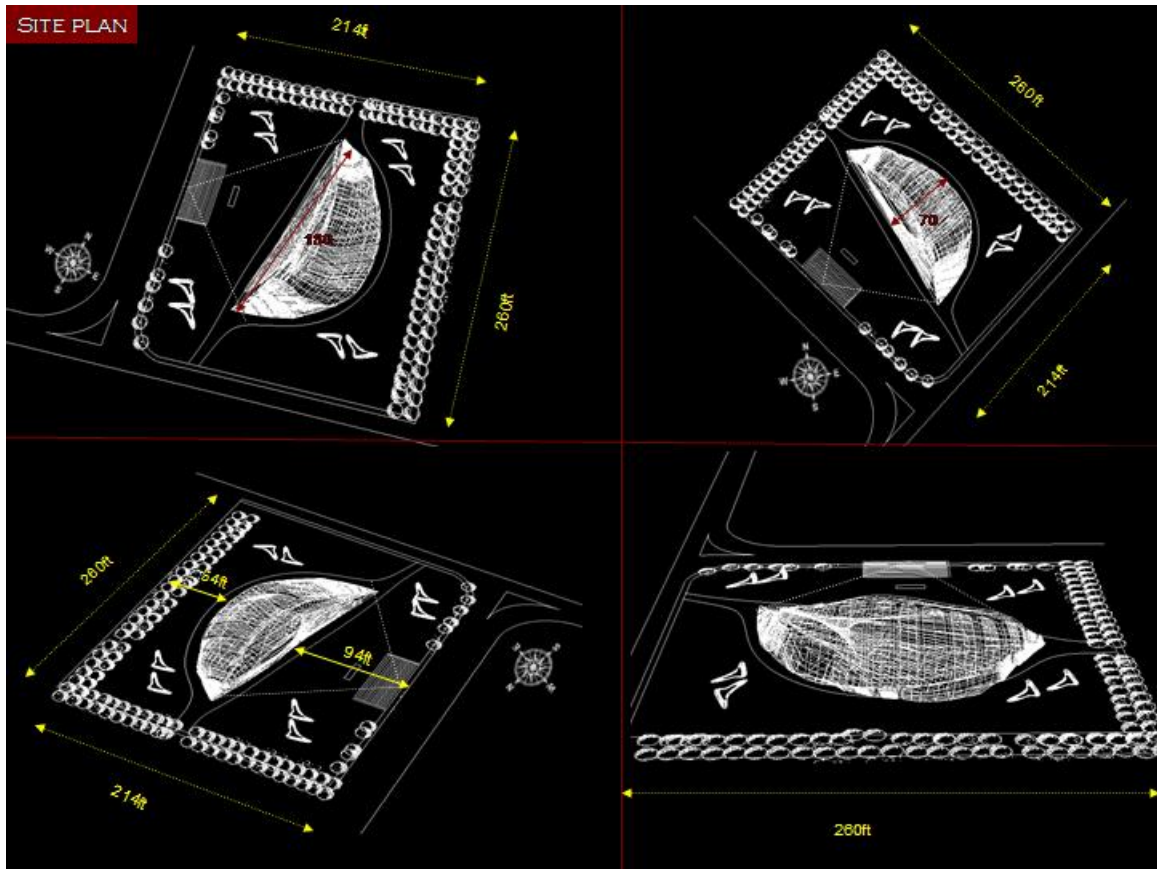


Figure 25: site plan

Section through Site

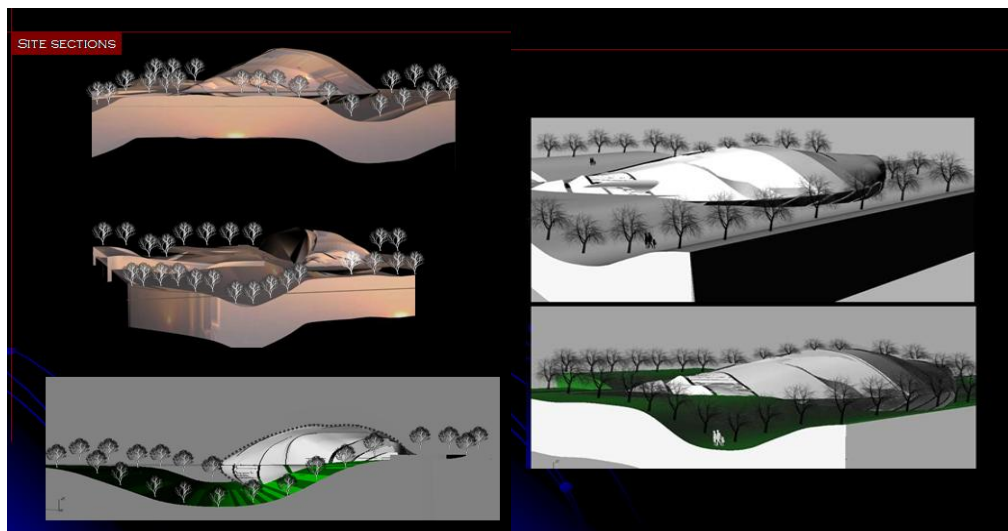


Figure 26: sections through the site

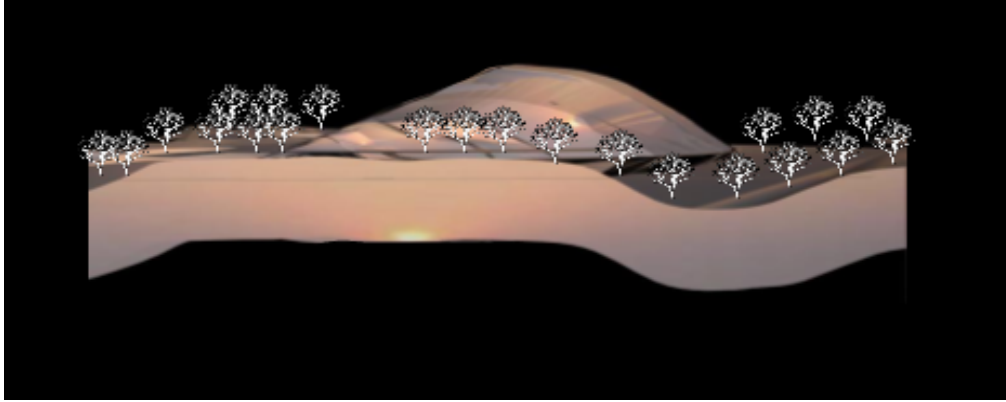


Figure 27: section through the site

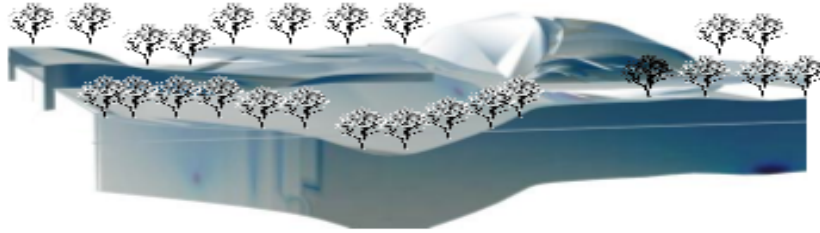


Figure 28: section through the site

Various perspective renderings were carried out to show the different effects of the interior and exterior of the children's event and exhibition center. The initial concept model was also placed on the existing site next to the Accra Sports Stadium in Ghana to give an indication of how the building would relate to its environment. The following images show the concept and final models in different scenarios, interior, exterior, and context.

Exterior Perspectives

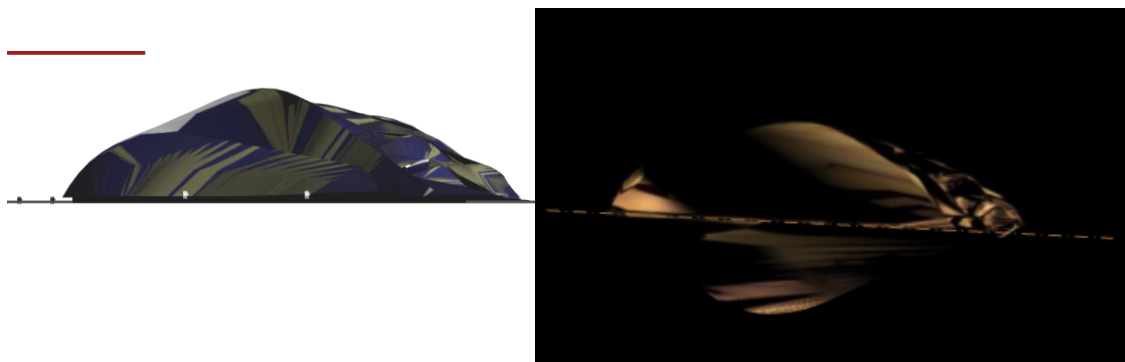


Figure 29 : exterior perspectives

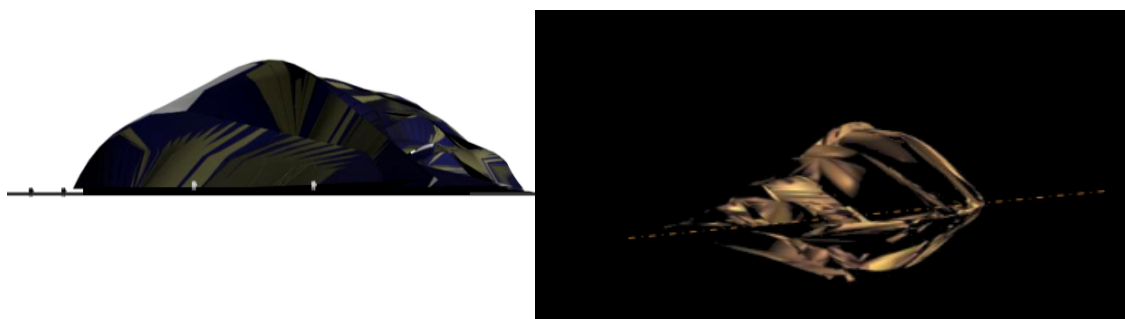


Figure 30: exterior perspectives

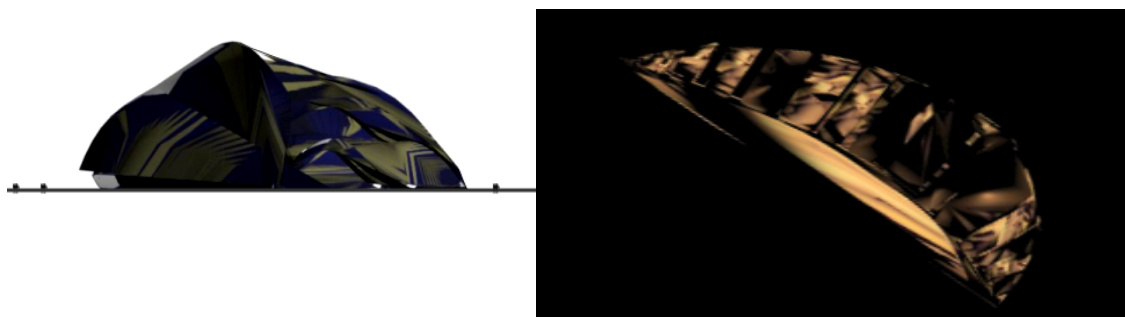


Figure 31: exterior perspectives

Interior perspectives

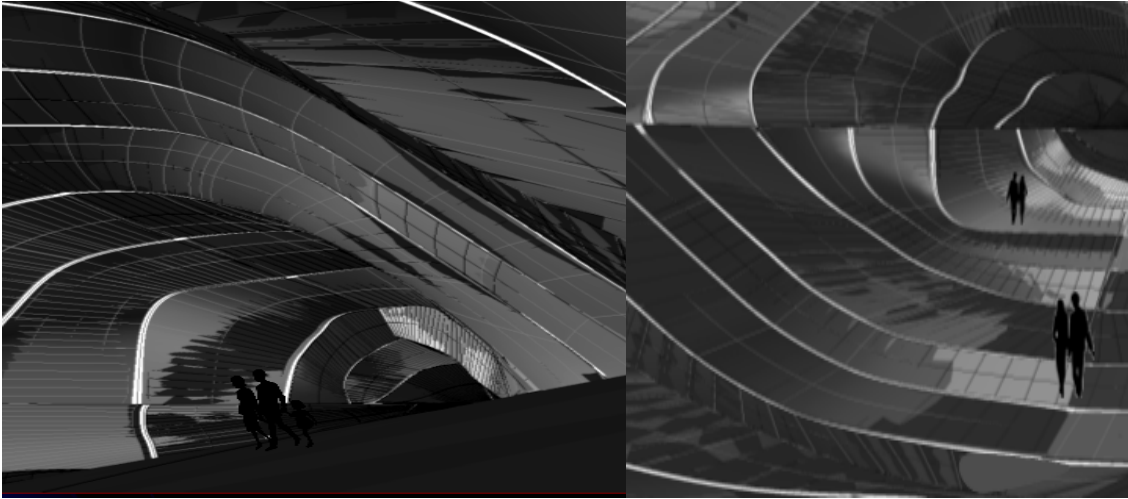


Figure 32: interior perspectives

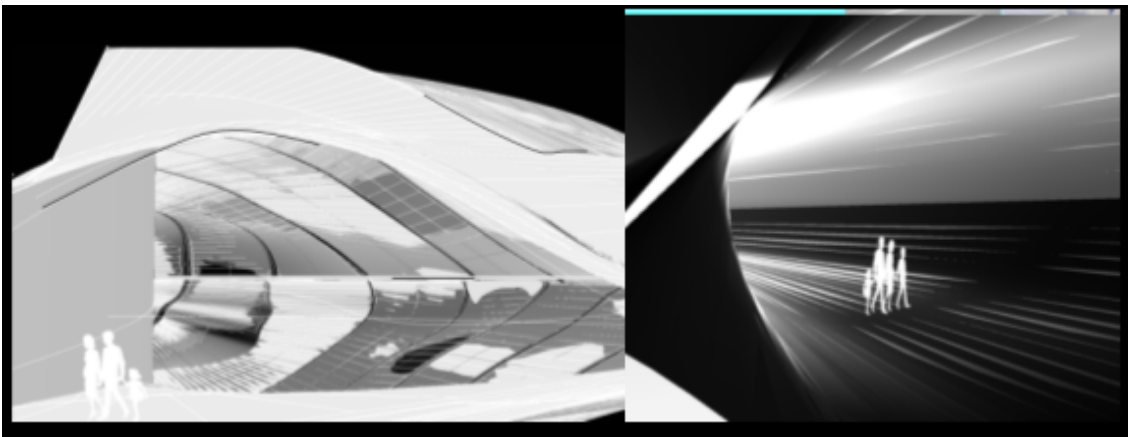


Figure 33 interior perspectives

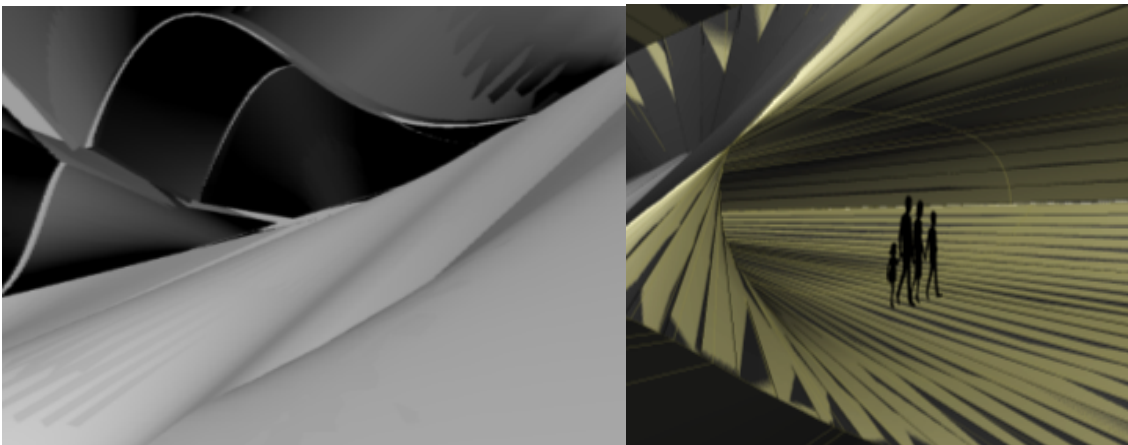


Figure 34 interior perspectives

Contextual drawings

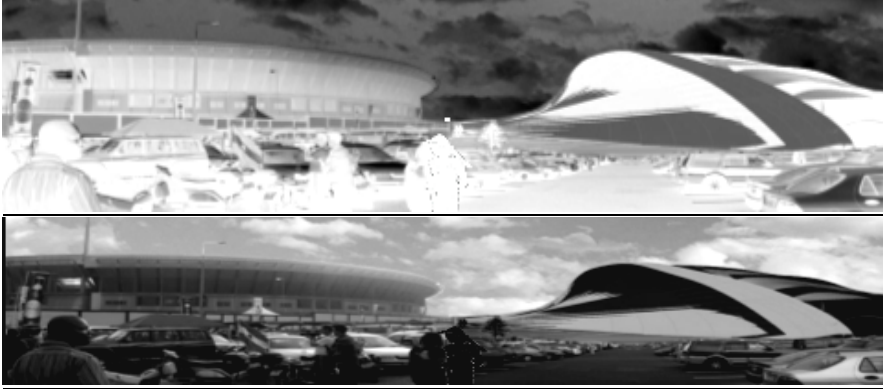


Figure 35 Contextual drawings-concept model and the Accra Stadium

This thesis has been a reaction to the town of Osu, its settings, essence and modest rituals. The Children's Event and Cultural Center in Osu was designed to bring together the children of Osu, who would otherwise have little or no collective interaction, during short periods of time where they can collectively enjoy the image and essence of the district as a haven for all children.

BIBLIOGRAPHY

1 Globalizing City: The Urban and Economic Transformation of Accra, Ghana (Space, Place, and Society) Richard Grant Syracuse University Press New York 2009.

2 Globalizing City: The Urban and Economic Transformation of Accra, Ghana (Space, Place, and Society) Richard Grant Syracuse University Press New York 2009.

3 A New Geography of Ghana, Kwamina B. Dickson, George Benneh, and R. Essah Asempa Publishing Co, Accra 1988.

1 A New Geography of Ghana, Kwamina B. Dickson, George Benneh, and R. Essah Asempa Publishing Co, Accra 1988.

5 Politics in Ghana 1982-1992 Rawlings, Revolution and Populist Democracy, Mike Oquaye, Tornado Publications, Accra 2004

6 A New Geography of Ghana, Kwamina B. Dickson, George Benneh, and R. Essah Asempa Publishing Co, Accra 1988.

7 The History of Ghana (The Greenwood Histories of the Modern Nations), Roger S. Gocking, Greenwood Press, Connecticut, 2005

8 The History of Ghana (The Greenwood Histories of the Modern Nations), Roger S. Gocking, Greenwood Press, Connecticut, 2005

9 World Bank, Country Development Report- Ghana. Development Indicators. August, 2004.

- 10 World Bank, Country Development Report- Ghana. Development Indicators, 2004.
- 11 Economist Intelligence Unit (EIU), Ghana country profile, 1998-1999-04-14
- 12 Economist Intelligence Unit (EIU), Ghana country profile, 1998-1999-04-14
- 13 Economist Intelligence Unit (EIU), Ghana country profile, 1998-1999-04-14
14. Ethnicity in Ghana: Lentz, Carola, and Paul Nugent, Macmillan, London, 2000.
- 15 Central Intelligence Agency (CIA) Factbook, Ghana-Country Profile, 2007
- 16 Ministry of Foreign Affairs-Denmark, Global Development Report 2007
- 17 Ministry of Foreign Affairs-Denmark, Global Development Report 2007
- 18 Central Intelligence Agency Factbook, Ghana-Country Profile, 2007
- 19 Culture and Customs of Ghana (Culture and Customs of Africa) Steven J. Salm and Toyin Falola, Greenwood Press, Connecticut 2002.
- 20 Culture and Customs of Ghana (Culture and Customs of Africa) Steven J. Salm and Toyin Falola, Greenwood Press, Connecticut, 2002.

21 A Historical Geography of Ghana by Kwamina B. Dickson, Asempa Publishing Company, Accra 1971.

22 A Historical Geography of Ghana by Kwamina B. Dickson, Asempa Publishing Company, Accra 1971.

23 A Historical Geography of Ghana by Kwamina B. Dickson, Asempa Publishing Company, Accra 1971.

24 Geological Atlas of Africa: With Notes on Stratigraphy, Tectonics, Economic Geology, Geohazards, Geosites and Geoscientific Education of Each Country, Thomas Schlüter, Springer-Verlag, Berlin Heidelberg, 2008

25 Geological Atlas of Africa: With Notes on Stratigraphy, Tectonics, Economic Geology, Geohazards, Geosites and Geoscientific Education of Each Country, Thomas Schlüter, Springer-Verlag, Berlin Heidelberg, 2008

26 Geological Atlas of Africa: With Notes on Stratigraphy, Tectonics, Economic Geology, Geohazards, Geosites and Geoscientific Education of Each Country, Thomas Schlüter, Springer-Verlag, Berlin Heidelberg, 2008

27 United States Agency for International Development (USAID), Annual report on Ghana, July 2004.

28 A Geography of Ghana, Ernest Boateng, Asempa Publishing, Accra, 1966

29 A Geography of Ghana, Ernest Boateng, Asempa Publishing, Accra, 1966

30 Ghana and the Rawlings Factor Kevin Shilington, Macmillan, London 1992

31 United States Agency for International Development (USAID), Annual report on Ghana, July 2004.

32. Ghana, a Country Study Berry, LaVerle, ed, 3rd ed., 1994.

33 Structural Adjustment and Stabilization Policies in Developing Countries, A Case Study of Ghana's experience in 1983-1986. Ewusi Kwame, Accra, Ghana Publishing Corporation. 2000.

34 Ghana and the Rawlings Factor Kevin Shilington, Macmillan, London 1992

35 United States Agency for International Development (USAID), Annual report on Ghana, July 2004.

36 Structural Adjustment and Stabilization Policies in Developing Countries, A Case Study of Ghana's experience in 1983-1986. Ewusi Kwame, Accra, Ghana Publishing Corporation. 2000.

37 Central Intelligence Agency Factbook, (CIA) Ghana-Country Profile, 2007

38 Central Intelligence Agency Factbook, (CIA) Ghana-Country Profile, 2007

39 The Impact of Climate Change on Drylands: With a focus on West Africa (Environment & Policy) by A.J. Dietz, R. Ruben, and A. Verhagen, Kluwer Academic Publishers, 2004.

40 The Impact of Climate Change on Drylands: With a focus on West Africa (Environment & Policy) by A.J. Dietz, R. Ruben, and A. Verhagen, Kluwer Academic Publishers, 2004

41 Accra Metropolitan Assembly, Annual Municipal Report, Accra, 2006

42 Accra Metropolitan Assembly, Annual Municipal Report, Accra, 2006

43 Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, Manuel Gausa, Vicente Guallart, Willy Muller, Fedirico Soriano, Fernando Porras, and Jose Morales Actar publishing, Barcelona 2003

44 Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, Manuel Gausa, Vicente Guallart, Willy Muller, Fedirico Soriano, Fernando Porras, and Jose Morales Actar publishing, Barcelona 2003

45 Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, Manuel Gausa, Vicente Guallart, Willy Muller, Fedirico Soriano, Fernando Porras, and Jose Morales Actar publishing, Barcelona 2003

46 Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, Manuel Gausa, Vicente Guallart, Willy Muller, Fedirico Soriano, Fernando Porras, and Jose Morales Actar publishing, Barcelona 2003

47 Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, Manuel Gausa, Vicente Guallart, Willy Muller, Fedirico Soriano, Fernando Porras, and Jose Morales Actar publishing, Barcelona 2003

48 Metapolis Dictionary of Advanced Architecture: City, Technology and Society in the Information Age, Manuel Gausa, Vicente Guallart, Willy Muller, Fedirico Soriano, Fernando Porras, and Jose Morales Actar publishing, Barcelona 2003