

Modernism and Cultural Expression in University Campus Design in a Developing Country: A Case Study of Nigeria

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Introduction

Fry and Drew (1956) responsible for designing University of Ibadan campus noted “an architecture and form of urbanism will emerge closely connected with the set of ideas that have international validity, but reflecting the conditions of climate, the habits of the people and the aspirations of the countries lying under the cloudy belt of the equatorial world" (p. 29). This quote from 1956, four years prior to Nigeria's independence from British rule in 1960, captures the notion of how modernism was later adapted into the Nigerian built environment in Nigerian Universities. Fry and Drew were responsible for designing University of Ibadan the premier University in Nigeria using modernist idioms adapted to indigenous context. Modernist influences were evident in the designs of Trenchard Hall, Kenneth Dike Library and residence halls at the University of Ibadan campus.

Likewise, the founders of the Obafemi Awolowo University, Ile-Ife (formerly named University of Ife) had a modernist dream and this led to the search for an International style architect, Arie Sharon who worked with AMY Limited to produce the first master plan for the University in 1961. Arie Sharon was influenced by his teachers' pragmatic and functional approach at the *Bauhaus* in Dessau under Walter Gropius and Hannes Meyer. In the first two decades of the University campus development, the International or Bauhaus style was the template of the original master plan and building design. The architecture from the whole to the parts and from the parts to the whole reflected the *lesprit nouveau* (the

new spirit) or the *zeitgeist* (spirit of the age) of the technological age and functionalism that the modern movement stood for. Arie Sharon demonstrated International style influences in the designs of the Humanities blocks (1963), Students halls of residence (1964), Hezekiah Oluwasanmi library (1967), Institute of Education and Secretariat (1968) and Oduduwa hall (1972).

The modern movement subscribed to the definition of architecture by the Roman architect Vitruvius in 'Ten books on architecture' written probably in 15BC and dedicated to his emperor Caesar Augustus as a guide for building projects. Vitruvius according to Sir Henry Wotton's translated version of 1624 wrote that architecture must have firmness, commodity and delight. This implies in contemporary English that architecture must be sturdy or structurally stable, useful or functional and beautiful or aesthetically satisfying. The modern movement actually believes more in the first two qualities with emphasis on maximizing the properties of modern materials in use and functionality, while avoiding ornamentation. Adherents of the modern movement believe that architecture is not only about one building or project, but how it fits into the environment and context is also important. The building and the overall environment must be functional. Ariel Sharon planned the architecture of the university core (the senate building, library, Oduduwa hall, and bookshop and university hall) based strictly on the concept of group architecture (Sharon & Sharon, 1981). This idea of relating each building to the surrounding buildings and overall context is one characteristic of Obafemi Awolowo University architecture.

Another architect, the British architect Maxwell Fry, himself an adherent of the modern movement who pioneered modern tropical building and town planning was a partner to Walter Gropius when he fled from Nazi Germany between 1934 and 1936. Fry also contributed to the modern tropicalized architecture of University of Ife by designing the Institute of African Studies building whose construction started in 1972. The design partners of the Institute of African Studies consisted of Maxwell Fry and his wife Jane Drew and Robin Atkinson. Maxwell Fry and Jane Drew designed and built many projects in British West Africa including many buildings at the University of Ibadan, the premier

University in Nigeria. The architecture of University of Ibadan and Obafemi Awolowo University are discussed next under four subheadings: architectural expression and perception, building organization and spatial layout, climatic response and cultural expressions in modernist ideas. Finally, the authors make some future recommendation for the University campus design in Nigeria.

Obafemi Awolowo University

Architectural Expression and Perception

Architectural expression and how it is perceived by others is not only about the design of buildings, it is also about how the buildings fit into the environment and context. The appellation of “the most beautiful campus in Africa” for Obafemi Awolowo University resulted from the perception of the architectural expression of the buildings and the overall environment (Olaniyan, 1979). This impression starts from driving in through the main gate on the south towards the campus in the northern direction through road 1, the main entrance to the campus. The landscape and the natural ecosystem create in the mind of the observer a serene environment that is excellent for academic activities. The road 1 circulation axis terminates with a panoramic view of the Senate building, the University hall with bookshop, Oduduwa hall, the library and the connecting formal court/plaza. All these are seen in a background of natural hills, mountain and vegetation of the campus undulating topography. This first impression is that of uniformity of architectural expression that perfectly fits into the natural context, a form of organic architecture (Figure 1).

The emphasized horizontality of the building elements not allowing for the full perception of building heights and the colors blending with that of the soft and hard natural and designed landscape is a major feature of the campus (Figure 2). This perception of delightful architecture is reinforced throughout the original academic core. This core is defined by road 2 where road 1 terminates, the road in between Oduduwa hall and ‘white house’ (faculty of science building), the road at the back of faculty of social

sciences building and the road in between the Humanities and biological sciences faculty that completes the clockwise loop to road 2.

An extension to that original academic core on the eastern side is the faculty of biological sciences that maintains the rectilinear configuration of the original core but with the formalistic categorized lecture theatres (BOOA, BOOB & BOOC that is, Biological Sciences Lecture theatres A, B and C with differing capacities). On the western side of Oduduwa hall (Figure 3) and the Greek agora formed amphitheater is another extension, the faculty of science building popularly referred to as the white house. The architecture of the biological sciences building is also non-domineering of its natural context like the original academic core. It hugs the site in a perfect fit that is further emphasized by the green 'bats' buffer towards the faculty of Agriculture. The flow and uniformity of expression goes across road 2 from the biological sciences faculty to the health sciences faculty building. In fact a first time visitor that is strolling around on the campus may not know the difference between being in the biological sciences building and the health sciences building. That is how well the architectural expression of both faculty buildings conforms. It is significant that the architectural expression of the western side extension to the original academic core and the eastern one are similar. The 'white house' (faculty of science) was designed to have similar architectural character as the biological sciences and the health sciences. The adjoining faculty of pharmacy building contrasts the health sciences building not in an obtrusive manner. It repeats an interpretation of tropical architecture that simulates 'stack' ventilation through a raised inner court roof that allows displaced warm air to escape. Uniformity, repetition and similarity are modes of architectural expression that is common in the original academic core. Contrasts are present but are less common and where they exist they are not obtrusive or unsightly.

One of the early buildings that contrasted the others is the central cafeteria building (now occupied by the Department of Architecture. Originally designed to have open international style universal spaces, it is set on a hilly slope in the heart of the students halls of residence. It is not centrally located but it enjoys prominence by its architectural character of four pyramidal roofs and landscaped

access that gives an impression of a procession towards an Eastern worship temple. It provides a contrast to the rectilinear modern style student residential blocks. It fits the topography of the site and as a cafeteria provided a flow between the magnificent three-dimensional spaces inside and the terraced landscaped spaces outside. Contrasting the existing appears to be the norm in the most recent additions to the Obafemi Awolowo University campus from the 1990s and especially in this millennium. Examples include the computer center, the addition to the Senate building, the museum and cultural studies building and the newly built lecture theatres. They are all uncharacteristic of surrounding buildings and the contextual and group architecture of the original academic core. The newly completed museum and cultural studies building completely contrasts the buildings on either side of road 2 where it is located. It is a legitimate mode of architectural expression but such iconic buildings need to be carefully located. The Ajose lecture theatre on the other side of the 'bat' green belt from the biological sciences also has a domineering presence. However this perception of dominance is subtle compared to the museum and cultural studies building. This may be due to the modifying effect of the green belt and its height compared to the height and massive presence of the natural history museum and faculty of agriculture buildings. The computer building is neither iconic nor conforming to any existing architectural imagery around it. It is backing the department of food technology and chemical engineering building that subtly idealizes the biological sciences building on the other side of the road.

However there are additions that conform to the existing. The 'yellow house' (department of mathematics) extension/addition to the 'white house' (faculty of science) in the direction of road 2 shares the same architectural character though the standard of execution is not the same. The addition to the geology part of the science faculty in the north also attempts to maintain the architectural character of the original 'white house'. The architectural character of OAU Ile-Ife is a reflection of the building designs and the efficient layout.

Building Organization and Spatial Layout

The architect Arie Sharon was not new to large scale planning. He headed the government planning department that set up the national outline plan that provided for the establishment of 20 new towns when the State of Israel was created. Together with his partner Benjamin Idelson and AMY Limited they created a functional campus layout that respects the natural setting. The academic core is centrally located and closest to the students halls of residence with the staff quarters separated on the other side. The overall layout has delineable and recognizable parts with the maintenance department close to the main gate, the sports complex and academic area easily accessible by outsiders and centrally located for students and staff. In recent years, a private students' hostel area has been growing close to the main gate. It is opposite the maintenance department but serviced from outside the main gate on Ede road with internal pedestrian access for students. A bank street is also growing opposite the sports complex. The academic core is seemingly boxed in except towards the institute of African studies, the zoological garden and the Institute of agriculture buildings allocated to the faculty of environmental design and management. It is in circulation planning in the academic core that the layout is most efficient.

Pedestrian movement is primal in the circulation planning of the academic core. The academic core has little intrusion by vehicular movement since parking spaces were located at the periphery to service groups of buildings. The road in between Oduduwa hall and the 'white house' and the one in between the Humanities blocks and Biological sciences are the only north to south roads while road 2 and the road behind the social sciences faculty and fronting the zoo are the only east to west roads. This minimal intrusion by roads is despite having three parallel arrangements of building blocks between the Oduduwa- amphitheater- administration- law-social sciences column through the education- library- formal plaza column to the humanities- secretariat addition column. Buildings are planned to account for pedestrian flow and circulation. They therefore fit into the context without obstructing existing patterns and feel as if they have always been there. For example the pedestrian flow from the students hall of residence through Moremi hall, the 'white house', Hezekiah Oluwasanmi library through the humanities

to the biological sciences is unbroken except by needed zebra crosses on the roads earlier mentioned. There is also a balance of building and nature with trees and shrubs puncturing the panoramic view of buildings on most elevations. The aesthetics of the environment is not only dependent on the building design but also on the design of the outdoors. The landscape design incorporates both soft and hard landscape of different heights and categories respectively. The building design, orientation and terracing along the slope create interesting skyline and good vistas and the repetitive forms is a visual pleasure. Open drains are rare in the academic core. Sewage lines are invisible and service lines are generally planned to be conduit or underground. In recent times, the explosion in student population and the construction of new buildings is threatening this dream of the original designers.

The spaces in and around buildings ensure that lecturers and especially students have adequate space to relax and wait in between academic activities. This is done by consciously creating and integrating courts, gardens, spaces beneath and in between buildings for functional use. Stairways, retaining walls, side walls, railings and balustrades are not conceived just for change in level. They are made more functional by having sitting surfaces in permanent materials as sit outs in gardens and lawns. Permanence was a major consideration for both exterior and interior finishes. Finishes are in natural materials like different types, sizes and colors of stone, tyro lean/sandcrete textured finish or simply 'brutal' architecture of the modern movement in the form of natural concrete. Even when colors are used they are in the range of off white, grey, rusty brown and dull green or other colors that complement the natural colors of the landscape. The hard landscape finishes are rugged materials like granolithic floors, marble, terrazzo, concrete tiles and in-situ finished smooth and patterned floors that has withstood the last 30 to 50 years. Some are still withstanding the test of time with others needing repairs. The same cannot be said of the ones done in this millennium. The building design and external landscaping are not only complementary and functional, they are also climatically responsive.

Climatic Response

The modern movement sought to create aesthetically satisfying architecture in a *machine age* without embellishments and ornamentation. In a sense they believed that functionalism as a creed is aesthetically satisfying. The idea of tropical architecture is in tune with the belief of the modern movement. Most first generation buildings on the OAU Ile-Ife campus have the north to south orientation. This means that they are longer in the west to east direction, where they have little or no openings and have major window openings towards the north and the south. The idea is to maximize natural ventilation from the southwest and north east trade winds at different times of the year and minimize solar heat gain from the sun. Openings towards the east or west if they exist were heavily protected with sun shading devices, perforated screen or *brise-soleil* as a master of the modern movement Le Corbusier refers to it. The other option is to have the openings in deep recesses. Even the north and south directions have balconies or recesses or deep roof overhangs to create shadow effects and protect users and the wall of buildings from solar heat gain.

The inverted pyramid design of the faculty of education with the deep projecting roof that is replicated in the faculties of administration, law and social sciences group of buildings exemplifies these elements of tropical architecture. The inverted pyramid form is present in the humanities building in another form with the upper floors heavily cantilevered beyond the lower floors in increasing proportion. The buildings are mostly rectilinear and elongated from the west to the east. The repetition of these rectilinear forms in series provides mutual shading, cooling and ventilation for the blocks especially when there is adequate in between space. The ventilation problem of double rectilinear forms in a building is solved by raising building up on *pilotis* to allow incoming cool air to displace warm air through an internal court with a raised roof. The internal court is made more functional by locating the means of

horizontal and vertical circulation and social interaction spaces in it. This is the case in the social sciences, law and administration faculties group, and education and pharmacy buildings.

Tropical architecture borrowed ventilation and lighting strategies from Yoruba traditional architecture. Yoruba traditional architecture is known for the courtyard as not only a means of natural ventilation and lighting, but also a means of internalizing social activities in the family. The courtyard was also adopted for all these purposes and much more in many faculty buildings. It was utilized in the biological sciences and health sciences faculty buildings but in a much more functional way in the Institute of African studies building. Whether in the building with light well or inner court or courtyard, spaces are usually arranged along single loaded corridor that grant access to the spaces with the external wall shaded by deep overhanging roofs or shading devices with windows protected in recessed walls or by shading devices. The outdoors was designed to complement the indoors d in moderating the harsh tropical climate for optimal human performance.

Hard and soft landscapes were used in appropriate proportions to minimize heat gain and ensure a balanced ecosystem for human habitation and sustainability. Areas un-built like the 'bat' forest between biological sciences and faculty of agriculture were conserved. Trees provide shade from the sun and provide relaxation space during break in human activities. They also provide shade for large hard surfaces like car parks to reduce heat reflection and heat gain. Trees also break wind speed that can be serious in undulating landscapes as that of the OAU campus. The planned and unplanned green environment especially the low ecosystem helps to take care of some drainage problems naturally.

University of Ibadan

Architectural Expression and Perception

After World War II, Britain decided to finance education in its colonies and this resulted in the establishment of University College Ibadan (now the University of Ibadan) the premier University in Nigeria. The husband and wife team of Maxwell Fry and Jane Drew who worked with Le Corbusier on the new capital of the Punjab, Chandigarh designed University of Ibadan. University College Ibadan campus was built in two phases. Phase one was completed in 1955, five years before independence from colonial rule. Phase two was completed in the 1960s. Livsey (2014) notes “The University of Ibadan’s buildings present an interpretative labyrinth – but that’s what makes them so interesting. Planned and built between 1948 and 1958 to house Nigeria’s first university, the campus offers a spectacular display of Maxwell Fry and Jane Drew’s brand of tropical modern architecture. Their designs for the university, virtually a city in its own right, included halls of residence, lecture theatres, places of worship, and a dramatic library.” Fry and Drew’s experience of designing in the Indian tropical climate was very beneficial for them in designing University of Ibadan. The buildings they designed for the new Ibadan campus were extensive and organized to reduce walking distances. The buildings included the assembly hall (Trenchard Hall, Figure 4) for about 1000 people, a tower to act as a landmark symbol for the university, residential colleges, a theater, and a library to mention a few.

Fry and Drew were ‘sympathetic to the African cause and were sometimes reluctant to make any changes to the seductive landscape and villages they encountered (Jackson & Holland, 2014). The history of University Education in modern Nigeria dates from 1948, when the University College of Ibadan was established. For more than a decade the college remained the only institution of University standing in Nigeria. Maxwell Fry and Jane Drew worked together on the Master plan and many buildings of University of Ibadan and considered University of Ibadan to be the zenith of their career (Jackson & Holland, 2014). In the planning of the University of Ibadan administrative and academic areas, student

and staff residences and recreation areas are all fused together to form an organic whole. The travelling distance between the different uses are minimized to reduce commuting time and possibly allow pedestrian movement. It may also have been to facilitate intensive interaction among the campus occupants that is thought necessary for higher level education.

Fry and Drew emerged from an aspiring middle class who took advantage of university education to pioneer modern architecture in 20th century Britain. Fry who got converted to modernism from classicism in the 1920s, participated in the Modern Architecture Research (MARS) group, was an ardent follower of Bruno Taut and Mies van de Rohe. Fry partnered the Bauhaus founder Walter Gropius and collaborated with Le Corbusier in the building of Chandigarh in India (Jackson and Holland, 2014). All these affected Fry and Drew's later work including University of Ibadan. The 1930s modern architecture featured geometric, white, concrete buildings. Though Fry and Drew departed from these features, the composition of their building façade still retained the crisp, linear and geometric components (Jackson & Holland, 2014). In the case of University of Ibadan like their other works in British West Africa these features became tropicalized to protect the users of the buildings from the elements. Most of the early buildings in the University of Ibadan are featured prominently in discussions of tropical modern architecture. According to Jackson and Holland (2014), Jane Drew was known to acculturate the needs of the users and the clientele and become socially involved in whatever community the partners are designing for. Mellanby, Tedder, Kuti, Sultan Bello and Queen Elizabeth II students halls of residence were some of the residence halls designed by Maxwell Fry and Jane Drew on University of Ibadan campus. The campus is also renowned for the Kenneth Dike library (Figure 5) building which is striking and impressive and frequently cited as a key work in tropical architecture (Jackson & Holland, 2014).

Building Organization and Spatial Layout

In terms of building organization and spatial layout, Uduku (2006) notes “the master plan sprawls across the contours of the site, determinedly orientated north south, in long thin strips to take advantage of prevailing winds for ventilation requirements. There is the continued use of glass louvres and concrete

shading devices such as screen walling on north and south west- and east- facing walls are generally blank. The campus is comprised of teaching residential and public facilities. The teaching facilities comprising lecture theaters, the library and laboratories have been designed particularly with environmental considerations in mind, learning blocks being oriented with their longer sides facing north south and single depth in design.” p.9

The Kenneth Dike library building has access corridors on each bank and interior shutters to protect from storm damage (Uduku, 2006). Reinforced concrete screen walls with insect nets made from cooper mesh incorporated in it serves as another level of protection. The residential blocks are designed around courtyards much like traditional Yoruba compounds designed around courtyards. Fry and Drew designed the Festival of Britain while working on the design of University of Ibadan, so there are some similarities between their design of the Festival of Britain and University of Ibadan. The University central hall has been described as a miniature Royal Festival Hall (Livsey, 2014). The university dining hall roofs were also similar to the Royal Festival Hall cafeteria roof. Livsey 2014 notes “despite Fry and Drew’s assiduous planning for the southern Nigerian climate, there is an odd Englishness about this Nigerian university. The halls of residence are planned around intimate quadrangles, a reinterpretation of old Oxbridge colleges in pale concrete, with neat lawns, porters’ lodges, and halls for formal dining with a raised ‘high table’ for status-conscious lecturers. The jarring juxtaposition between the Englishness of these buildings and their Nigerian site reminds us that their meaning was formed as much by decolonization politics as it was by their architecture.”

Climatic Response

Le Roux (2004) notes “climatic responsiveness was a central concern in western descriptions of practice abroad during the 1950s. For instance, climate motivated the arrangement of work in a survey of building in the Commonwealth... one of the physical hallmarks of modern architecture of the tropics was the sunscreen, usually called *brise-soleil*, located on the facades that faced the sun to prevent its rays penetrating the building’ interior. By shading the interior, and glazed surfaces in particular, the heat build

up caused by thermal storage within the interior and the greenhouse effect of collected, irradiated heat as diminished (p.442).” Fry and Drew’s experience and understanding of designing buildings for tropical climates particularly their work in India with Le Corbusier made them well suited to design the university campus at Ibadan. Ibadan location in a warm humid zone made environmental considerations a priority for Fry and Drew. Some of the strategies they utilized included orienting the buildings to capture prevailing winds, minimal use of wood because of the prevalence of termites in the tropics, and the use of concrete for permanence.

Reinforced concrete was used in the construction of University of Ibadan because there was hardly any other material and reinforced concrete could cope with large openings for breeze to pass through to cool the interiors. At the University of Ibadan, the teaching blocks, assembly hall, library and residences were grouped around courtyards very similar to traditional Yoruba courtyard architecture. The buildings built of reinforced concrete had open balconies with concrete screens with forms derived from African art work. University of Ibadan campus buildings mainly have the north to south orientation, most window openings were in the north and south to maximize natural ventilation from the southwest and north east trade winds at different times of the year and minimize solar heat gain from the sun. If openings existed in the east or west façade, they were heavily protected with sun shading devices, perforated screen or *brise-soleil* as a master of the modern movement Le Corbusier called it. Another option was to have the openings in deep recesses. Even the north and south directions had balconies or recesses or deep roof overhangs to create shadow effects and protect users and the wall of buildings from solar heat gain. Overall, the tropical climatic strategies Fry and Drew utilized at University of Ibadan campus buildings were later adapted and employed in tropical architecture across West Africa mainly and the rest of the African continent.

Cultural Expression in Modernist ideas in Obafemi Awolowo University and University of Ibadan Campus Design

This section summarizes the modernist ideas that were acculturated by the designers of Obafemi Awolowo University and University of Ibadan. The concept of group architecture is a main idea. The idea involves relating each building to surrounding buildings through arrangement around a central space or repetition or uniformity of architectural expression. This concept of group architecture directly relates to, reflects and invokes the African communal spirit. The central space idea relates to the courtyard as a central organizing element in Yoruba traditional building and other African cultures. The courtyard in Yoruba traditional building was also a solution to the environmental climatic problems. In Yoruba traditional buildings, courtyard of different sizes, scales and levels were used to separate different parts and sections of the same building and group of buildings. In their climatic response popularly referred to as tropical architecture international style forms deployed 'socio-cultural' courtyard spaces in the search for natural lighting, ventilation and social space. Sun shading devices sometimes utilized the sculptural forms and motifs in African traditional art. Scientific ideas of stack ventilation, orientation relative to the sun and wind direction and balance of soft and hard landscapes further complemented the climatic importance of courtyards.

Many African communities including the Yoruba respect the natural environment to the extent of deifying some parts of it. The modernists' designers of both Universities interpreted this by ensuring a balance between built forms and the natural ecosystem and environmental context. Separation of pedestrian and vehicular movement and ensuring close proximity of different uses allows for social interaction that is a quintessential part of African communal life. This planning idea allows students, academic and non-academic staff including other people on campus to have unplanned interaction. The designers also utilized African symbolism in addition to sometimes colonial symbolism. The *Opa Oranmiyan* beside the entrance ramp to the library at Obafemi Awolowo University where the view from the entrance to the central piazza (formal courtyard) between the administration building, the library and

the Oduduwa hall (the indoor and outdoor performance building) terminates is a case in point. The *Opa Oranmiyan* is a replica of the traditional one in Ile-Ife town. Ile-Ife is regarded as the cradle of Yoruba civilization. Oranmiyan was the first king of Ile-Ife and the first son of the progenitor of the Yorubas-Oduduwa.

Summary

It is important for contemporary Nigerian architects to learn from the architecture of the Obafemi Awolowo University and University of Ibadan, most of the buildings are over half a century old and some of the strategies adopted have withstood the test of time. The design of new buildings should be tropicalized and take cues from existing buildings around it. The concept of group architecture and the pleasantry of repetitive blocks are still important. Flat roofs were common in the old buildings and were constructed with surface finishes designed, detailed and executed to be water proof until the predicted life. However, flat roofs are problematic in tropical environments, where pitched roofs allow for rain water runoff. More recently, some of the buildings have been retrofitted with gable roofs above the flat roofs due to roof leakages.

Green belts must still exist to modify climate, support sustainability and to reduce the impact of stormy winds in the undulating topography. Parking spaces should serve group of buildings and pedestrian movement must be given priority over vehicular movement. New buildings must respect and account for existing patterns of movement and as well as relate to surrounding buildings. The architecture of Obafemi Awolowo University and University of Ibadan amongst others should always account for the gains of the past, reject the problems of the past and present and project into the future. The search for a Nigerian Architecture should begin by a good understanding of how cultural expressions were fused with modern architecture in the colonial and post-colonial period.

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Figure 1: View from Oduduwa Hall, Obafemi Awolowo University



Figure 2: African Studies Center building with landscape and natural ecosystem creating a serene environment for academic activities, Obafemi Awolowo University.



Figure 3: Oduduwa Hall, Obafemi Awolowo University.



Figure 4: Trenchard Hall, University of Ibadan



Figure 5: Kenneth Dike Library, University of Ibadan