

# Campus design and symbolic Order in Contemporary Nigeria: A Case Study of Covenant University Campus, Ota. Nigeria

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## **Abstract**

Many researches in Africa particularly after their independents exert lots of thrust in capital cities and housing development more than any other areas of physical planning. However, some few years ago a new trend of development in university education, (including campus) and other related activities have began to emerge. About a decade ago, Covenant University was established among others as a reformer to offer a more holistic education which addresses man's totality and provide a befitting campus environment that command international admiration. The study in its review of existing literature focuses on the uniqueness of Campus land-uses planning with the aim to dissect Covenant University campus design which is symbolic in all intent. The authors employ the data from calibrations of spatial situation of existing structures, street density and accessibility factors to determine the degree of coordination of the campus and the graph network or connectivity's of the campus. In the analysis of the entire campus built form and agglomeration, the study observed a loose coordination in the campus spatial structure. Moreover there is need for additional pedestrian walkways with plant shade in the campus. The study recommends compact development and beef up in the pedestrian paths as a measure to reducing long travel (walk) within the campus; equally it is to minimize continuous interference of vehicular traffic with pedestrians and cyclists alike. Larger open spaces in the campus should be filled with structures that are akin to the activity dominating the area. This becomes imperative in order that the unique design is not thrown out as a 'romantic nonsense' entity that can no longer magnetize attention or that which has lost its convenience attribute to the detriment of the community dwellers. The corrective measure is a proposition that can still be accommodated

**Key words:** Campus, Contemporary, Design, Order, Plan, Sustainability, Symbolism

## 1. Introduction

Researches in the areas of community design, socio-economic and environmental effects of the built environment are beginning to emerge particularly in a number of African nations; some of these have to follow the same trend of research and development that exist in the advanced nations that colonized the Africa continent. Since after the independence of those developing nations there have not been tangible areas of successful planning efforts. Recently, in furthering research to specific areas of need, African researchers in the field of planning have shown passion in urban environment and more importantly the urban land use planning and their effects on the built environment. With urgency to trigger transformation in every facet of physical development, most African nations had focused in creating a befitting and environmental friendly academic campus that are symbolic in nature. Consensus opinions have recommended that if the institutions of higher education are to reflect coherence, order and function in their overall design symbolically, steps must be taken to improve the campus design. Dober (2012) equally argues that institutions of higher education, as the leading edge of thought, have a societal obligation to search out and engender those methods of physical planning which are useful in their own way to the institutions and have application in other areas as well. It is however very lamentable that only few campuses are organized for this purposeful planning today, despite universally recognized benefits which such plans afford.

Here in Nigeria frantic effort to fostering land uses that support activities and service needs at the university community level has gained wide support especially as more universities with private initiatives are being built to compliment the existing overcrowded ones. Before the new millennium in Nigeria the power to establishment university education was primarily vested on the two tiers of government – the federal and the state, as such the nature of those universities design in practical term (physically and program wise) were absolutely influenced by the government that funded them. At the set of the millennium several non-governmental organizations upon the approval of the federal government have established their own universities, majority of which strive to birth reforms both in the curriculum and in the physical environment (including the campus layout plan). The focus of this paper is on the later, which emphasizes more on the spatial uniqueness of a place.

This consideration and need for sustainable university campus design to fit environmental space, boost social and economic growth sustainably in the contemporary Nigeria can not be overemphasized. In many quarters sustainable campuses planning have been advocated by the institution responsible for higher education establishment, however, the challenge to achieving good results has been around bringing everyone to a common thought. Aside this, the deep gap that must be bridged is the knowledge on how to create and sustain desired design of campus land uses, symbolic physical structures and their relatedness in space. All these are still very much under explored in Nigeria.

This study in a nutshell investigates the factors that give rise to the existing university campuses structural layout design with particularly reference to Covenant University, a Nigerian private university that was established to make a difference in the nation educational landscape. Implicitly the investigators consider a case study of facilities locations and structure design of one of the acclaimed ‘most beautiful’ Nigerian University campus (see picture plates in the appendix). Covenant University, by all physical attributes, has been adjudged most attractive when compared with other Nigerian university campuses. This attainment by implication will help setting a benchmark for other emerging higher institutions in Nigeria.

It is the authors’ intention to analyze which built form, land use, and agglomeration factors explain the observed deficiency or otherwise in structural layout of the referencing

campuses. The researcher is particularly interested in how major facilities usage (densities of use) is affected by the spatial configuration of the built environment - the physical pattern of the community infrastructure, the geometry and density of buildings and circulation routes. Since we have modeled our analysis at a fine spatial resolution across a small area, using individual buildings in the campus as a unit of analysis, this allows to some extent the application of graph theory type metrics to quantify the attributes of campus form around each building, and to model access to certain opportunities under a realistic constraints of the street network and built fabric. The contention here is that it is important to make a clear distinction between attributes of accessibility that results from campus form, and those that result from land use and transit attractions. Carrying out this allows for estimate and knowledge of how strongly used facilities are affected by the spatial configuration of the campus built form, as opposed to land use attractions and spatial relationship. The research attempts to estimate the extent to which facilities cluster at locations, for instance, large edifices like the campus guest house, Africa Leadership Development Centre (ALDC) and Cafeteria II are at closer proximity. This however may result from attraction to other facilities, land uses as opposed to attributes of accessibility that result from the spatial configuration of the area.

In all intent and purpose, this study is an applied research and becomes useful on two grounds. First, it contributes to planning literature and neo-classical functional location theory by addressing some scantily understood aspects of university campus activities arrangements; in other words, it endeavours to distinguish between two types of agglomeration factors, and why agglomerations start at particular locations. Second, it suggests workable strategies that aid professionals in devising spatial and policy incentives for generating economically sustainable planned area-scale activities clusters.

## **2. Background of Covenant University Campus.**

Located on a gentle slope terrain, 10 kilometers along Idiroko road, Ota (Lagos suburb), Covenant University as a co-educational learning Centre was established in October 2002 to raise new generation of leaders with expert thinking and managerial skills, providing solutions to the many challenges besetting the nation, Nigeria and the continent of Africa. According to its foundational objectives which includes: a powerful and compelling vision of excellence; quality service rendering which is equaled by none; an academic curriculum that is qualitative, service-based and value driven; an overarching emphasis on human development from a total man concept & Entrepreneurial Development base (Obayan, 2012). The race of excellence is indeed set for the institution which is now rated very highly in the recent Nigerian Universities web metrics just carried out.

Since 2002, Covenant University (CU) has invested colossal amount on its environmentally pleasing and master piece campus, overwhelmingly with ample infrastructure and well maintained landscape in high fashion. In one audacious stroke, propelled by a single master plan CU has transformed a nondescript, well standout building complexes into an international cultural destination. This new status of the university and the need for sustainable development triggered a comprehensive reassessment of campus facilities and its relatedness in space. While this study can only try to estimate the range of achievements at the institutions, it is particularly pleasing to note that the excellence of transformative research and community development have changed people's lives and perspective.

Among the various tasks the University is trying to accomplish, through the development of the campus plan, are: to re-establish a level of consistency in the architecture vocabulary; that is, scale, materials, colors, etc. of new buildings; reinvigorate the open space that were planned to give a strong visual order and connectivity to the campus; and moreover,

to create clearly defined outdoor spaces that work in harmony with the campus plan and ordering system.

As a compliment to these goals, the University has been pursuing several other, more functional, objectives (on a campus-wide basis) which include: to concentrate more on the pedestrian as the predominant users of the facilities—and therefore to attempt in every project to facilitate pedestrian movement and safety, and to create a comfortable atmosphere for pedestrians. Efforts have also been geared recently to rationalize the utility systems that serve the campus buildings, and to provide controlled access for service and delivery vehicles, concentrate necessary inner campus vehicular parking in accessible locations.

The University library otherwise known as Centre for learning resources (CLR) has a well-maintained physical building(s) that is geographically and physically accessible to members of the community and the larger community outside the university campus. Each situated facility is secure, comfortable, and conducive for all users including the aged and the physically challenged persons.

The library has adequate interior lighting, temperature controls, and appropriate furnishings to provide an atmosphere conducive for visitors and staff users alike. Basically and in line with international requirement, Covenant University library ensures that building has the required emergency facilities provision like fire alarms and extinguishers, emergency evacuation routes and exits, first aid supplies, and has provided for convenient and safe accessibility to well-lit parking areas at the front or few meters away to share with the university chapel parking lots. It must be noted that parking of visitors' cars is free for the time the library opens to all users.

It is worth saying here that space utilization challenge is not yet a concern in view of the limited numbers of users that patronize the library. Most libraries in the advanced cities usually conduct a study of the utilization of space in each facility at least once every few years. This assessment is meant to evaluate current space requirements, current community analysis, and estimated changes in technology, size of collections, and types of materials. This definitely is forecasting into the future of the library, particularly as the university continues to admit more students into different programs or expansion of its programs.

### **3. Review of Literature**

Campus planning is being conceived as the intended guidance of the amount, quality, and location of facilities for higher education so as to achieve a predetermined objective that is the plan which may be illustrated as a physical form depending on the type of plan, the form may range from a portion of a building to the entire campus and its environs (Dober, 2012). A good numbers of campus studies revealed several factors that determine the land use mix within a physical environmental space set up for academic community as they are often called, more like the requirements for a larger planned area, campus planning is purposeful in all ramification considering the diversified activities that must be integrated to achieve success. For example most parts of campus are highly pedestrianized, in some instances the landuses within the microsphere of the planned community buy into ideas of segregation of non related activities and aggregation of the similar uses. In the observation, of Zegras (2004), the purpose of a higher concentration of non-work land uses appears to reduce vehicle miles traveled and in perhaps decrease urban energy consumption (Newman and Kenworthy, 1999), produce better health indicators (Joseph et al., 2009), and foster social cohesion (Gans, 1962). The US Green Building Council few years back had established a programme known as Leadership in Energy and Environmental Design (LEED) to aid certifying the process of identifying projects and existing buildings that meet set standards in any given habitation. (EEER, 2006) Usually the

LEED project checklist is composed of prerequisites and creditable items in the major categories of building, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation etc.

This programme imposes some measures of influences on the quality and the relative growth rate of any given place. The consciousness of this component parts, often allows a series of thought which translate the visual pattern as we see it, into perception of possible models of urban area. From planning point of view attempts are made to connect these concepts with what obtains elsewhere to build a thoughtfully designed and common physical attributes of cities.

For ages past urban phenomena were linked principally by their concrete physical characteristics in terms of spatial arrangements. Accordingly, the grouping of the various land uses gives the impression of a concept in which each segment represents a separate unit essentially independent from the other segments. The residential, commercial, educational, industrial, recreation, and agricultural facilities present in urban environment are usually regarded as elements of development (Basorun, 2004).

Generally, campus land use planning, though a plan at a micro or suburbia level relates to two bodies of literature such as retail location theory, and configurational studies of the built environment. Both, over the years have developed vital tools for explaining the spatial distribution of land uses. However, a joint modeling framework and a mutual adoption of methods remain a challenge.

The road transport system is one of the most significant factors responsible for shaping the urban centers (Dickey, 1975), aside this transportation system acts as a basic component of urban areas' social, economic and physical structure. According to Andres (2010) the importance of studying accessibility is in order to understand the locational advantages of individual building rather than rely on traditional bid-rent theory. Graph theory is relevant to studies on accessibility and connectivity of two or more locations (Oni, 2008).

The built form or structure studies often suggest practical methods for measuring socially meaningful properties of the built environment using graph theory type indexes (Hillier and Hanson, 1984, Porta et al., 2009), but their methodology has not really been tied to urban economics operations. The research strategy presented in this study moves toward a joint approach, where spatial attributes of the built environment (including the academic institution environment) are evaluated from both social and cultural points rather than a wholesome economic perspective of land use location choices. In a knighted conception, Marshall (2005) has observed that in real conventional situation where a typical layout has diverse nodes and streets which can not distinguish the particular kinds of structure or hierarchy this suggests the need to consider alternative forms of analysis, that can appropriately represent the structure of urban street networks, by putting the lines of movement at centre stage.

#### **4. Research Method.**

This study derived its data from two sources. First is the actual calibration of various structures (buildings) and their interrelated distances in meters. Second is using the existing documented data from the Master-plan of the campus. Basically, a brief interview was conducted to ascertain wide range opinions on the entire campus connectivity and inter-relationship, the very character which an ideal university planning must possess.

From the first, we obtained data by actual measurement of facilities location and their inter-distance relationship from Covenant University (here refers as CU). Streets' building density is derived from the field survey. The individual building in the campus is given as

geographically referenced points that include edifice attributes and a unique categorization code that distinguishes buildings structure by type. The data includes a total of 15 individual building (edifice) of all categories in CU. Of these, we selected edifices that are categorized as activities generators and food services, which constitute a total of 8 establishments, and 2 eating (cafeteria and buttries) Data from all these allowed us to measure the distribution of the population or jobs holders from all the establishments at the individual building. Engaging the obtained datasets, we computed shortest path accessibility measures from each actively functioning buildings whether academic blocks or otherwise to senate house as business establishments. See figure 2.0 for the graph network.

## **5. Structure and Evaluation of CU Campus design**

CU campus strives to be an ever accommodating and enduring environment; its planning, landscape and architecture continue to reflect this. The existing operational physical Plans are to preserve the character symbolism defined in the original campus plan, while directing future growth and change is sensitively inclined and at the discretion of the Founder. The plan goal is to allow and to encourage the campus to continue to evolve in such a way that each building (and its programmatic needs) develops a distinct value of its own, while respecting and contributing to the overall campus environs; i.e., the sense of place that is Covenant University.

The Covenant University central campus is a balance of physical planning, philosophical evolution, and technological progress. The environment instills confidence in faculty, students, staff and visitors through the humanity of scale; it equally confirms commitment to a sustainable future; and exhibits detail finished work on its spaces in order to achieve an overall physical harmony.

Although not intended to be substantially prescriptive for a specific design outcome, the University's design guidelines aimed to define parameters within which a compatible design can be achieved. As it is the working design guidelines provide direction for both the project design team and the user representatives in understanding the physical characteristics of a building and/or landscape design that is acceptable within the CU context. The resulting designs often reflect the university's commitment to its traditions of excellence, its respect for its heritage, and its relationship to the immediate environment. This however is a matter of interpretation and not imitation.

The CU Campus spatial design with its fundamental principles were developed during the conceptual preliminary stage of the Master Plan planning process.. Ordinarily the campus spatial design as it is often reflected in the diagram allows the designers to consider relationships without focusing on particular details or the exact location of elements. This can also serve as a tool for gaining agreement on the whole direction of the Master Plan and articulate the relationships between component parts of campus.

In every planned space where this is employed, the campus spatial designed framework or diagram exemplifies the following conceptual assumptions which in turn, address the primary planning issues earlier identified in the Plan.

### **5.1 Circulation and Way-finding:**

The streets naming project in the university was recently carried out by the department of Estate Management in the School of Environmental Sciences. The streets and roads are named in accordance with the philosophy and core values of the school. Mandate road which is the longest serves as the primary commuter transportation routes, the road is a medium-speed roadway with an admirable character. Unlike what obtains in certain set up, there is no special

road set apart for visitors. For safety and security of users all the inner roads network are low-speed and have features of urban, pedestrian-oriented scale. The academic core is contained within the inner Roads.

### **5.2 Open space design and spatial distribution**

The campus design and spatial distribution of major open space or outdoor recreation have been strategically accomplished basically to provide a contrast to the type of open space provided in some related formal setting, it also takes account of existing campus features and vegetation. (See appendix 2 for the list of existing plants species in the campus). Among other intentions the overall open space design on one hand ensures good access to a variety of recreational spots for all students, staff and future residents and on the other hand, it is to strengthen ecological and aid integration with existing path networks.

A decade of active plan and development activities have allowed building structures to face on to spaces, thereby increasing the value of such facilities or amenities. On the size and number of outdoor /open space, the university development framework has implemented a limited number of large open spaces rather than countless smaller spaces. This approach, as it is obvious has afforded the following benefits among others: first, ability to create meaningful habitat and ecological corridors, second, has helped to create meaningful and usable open space which allows more efficient maintenance.

### **5.3 Parking:**

The issue of parking is germane to the efficiency of the campus. Parking is located at every major building and well connected to all Roads. Parking is also hierarchical by location, with housing parking being the furthest out, then commuter parking, and event parking closest to the inner circular road. Both visitor and worker have accessible parking that exist around every terminal point.

### **5.4 Utilities and Infrastructure situation**

In conformity with the best practice all buildings within the campus are situated along or adjacent to the existing utility corridors or utility system. The overall infrastructure of the campus itself is hierarchical and this allows the utility corridors and infrastructure capabilities to be explored at the site design level

### **5.5 Environment and Community Impact**

As a macro planned community, all visitors usually among the faith based church members enjoy a common attention just like every-day campus users in terms of circulation and parking. It is the plan of management that the campus sport arena and other facilities are maintained regularly to enable public access to them especially during the week ends and public holiday periods when patronage to the arena is thickest. The ultra modern swimming pool has been constantly used by the Living Faith mega church members on weekly basis.

### **5.6 Building Segregation**

Both aggregation and segregation design styles of structural are adequately engaged to blend with the Campus setting. The university's Senate building is distinctively separated from other buildings but at a reasonable walking distance from the major academic buildings. Refer to picture plates in the appendix page.

While Housing Estate occurs in the campus border zone, all academic buildings (eight in numbers) are contained within the campus but loosely connected by pedestrianized walkways and free vehicular access. In the campus high-rise building patterns is common. This

segregation of land uses supports long-range land reserves for future expansion of academic buildings and central facilities as they may be needed.

### **5.7 Pedestrian and Peculiar Site Studies**

Like a commonly used style of segregation of vehicular traffics from the pedestrians, the campus is characterized by a mix set up. The core area is not fundamentally a pedestrian space – the inner access networks are partly pedestrian oriented which favours slow vehicular speeds. The existing pedestrian routes follow in parallel fashion with the existing vehicular routes within the campus. Only in a very few cases one can observe a pedestrian walkway disconnected from a vehicular road. This style of communication route orientation has its own defects as the pedestrian are in constant interference with motorized vehicles noises and offensive fumes. To ensure efficient flow of storm water from the road down slope several of the pedestrians route are cut at interval into troughs. Rain storm often leave crevices on the surface of the walkways which are built with low cement-sand mixed. The future plan may consider outright replacement with better materials such as interlocking burnt bricks or tiles that can withstand any harsh weather condition of the site.

### **5.8 Existing Plant (trees and shrubs) in CU Campus**

The table in *appendix 2* shows the varieties of existing trees and shrubs in the campus of which majority are planted to blend with the campus's micro climatic conditions (characterized by high rainfall, high sunshine and relative humidity). The entire area occupied by the campus arose from abandoned kola nut (*Cola millenii*) plantation farm, that basically explains the reason for older trees which currently provide shades to other young ones. However, they will gradually fade off and be replaced with some exotic or local species adaptable in the campus environment..

## **6. The Campus Future Growth and Sustainability Plan**

With the University Master Plan (Fig.2) which depicts the general layout and interconnectedness of individual elements on the CU Campus, one can anticipate the future of the campus in terms of Context and Community, detailing future pedestrian and vehicular access to the campus on one hand and on the other hand, the proposed housing village expansion which when allow can trigger the surrounding neighborhoods for commercial activities development.

As noticed in the attached picture plates green areas development through good landscaping is what has been practiced to enhance the look of the campus. The future greenly community will ensure that green spaces are maintained and preserved in all open spaces; green arena with varieties of park-like landscape introduced to the core of campus and green belt preserved between existing housing estate and academic core.

Future Campus Entrance may be redesigned to blend with the community landscape. The following are anticipated in the near future: Entry point may be well provided with space to accommodate visitors parking; moreover, there will be limited access between the university library and student halls of residence from the rears, Campus square development may emerge in a suitable space

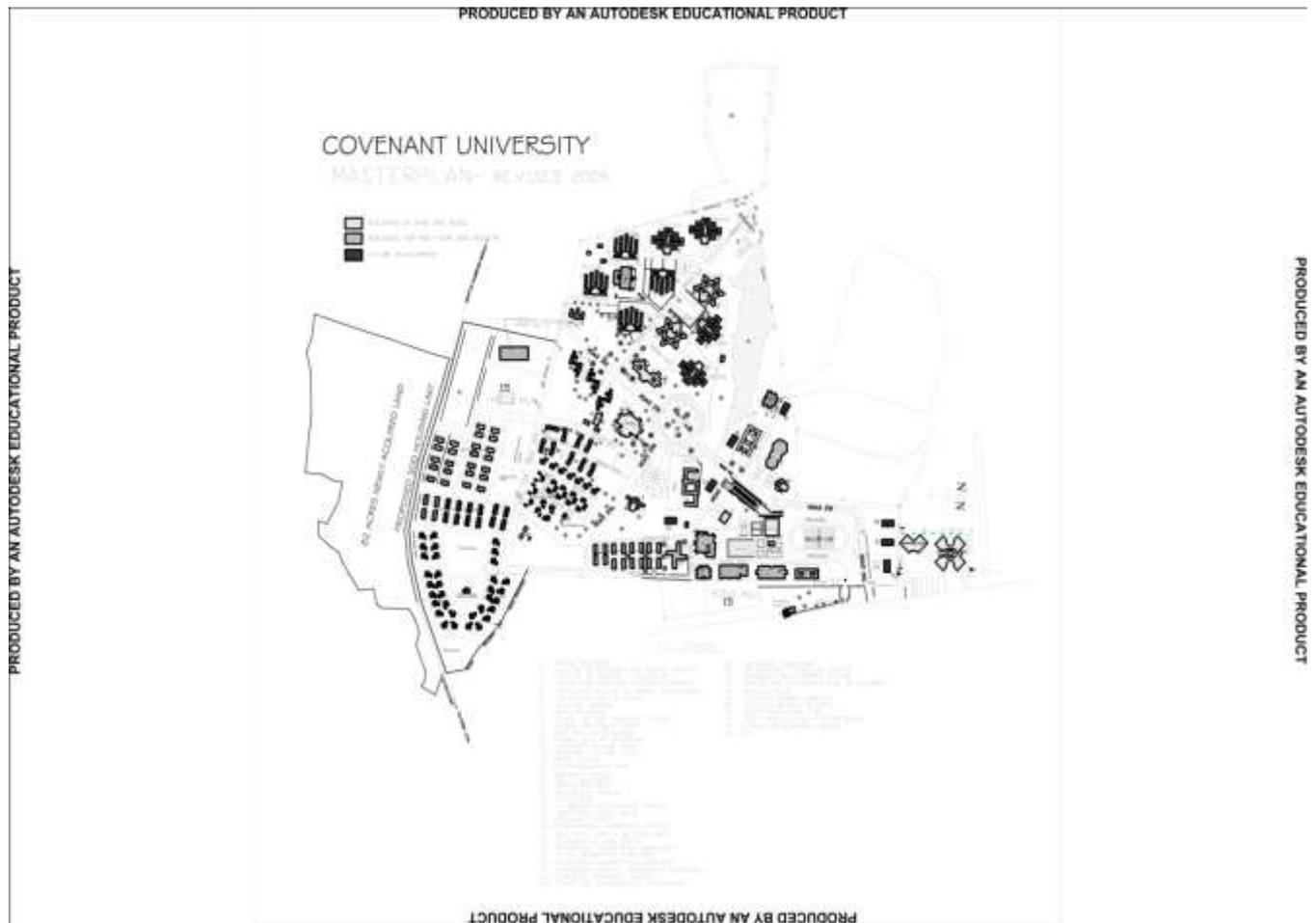


Fig. 1.0 : Structural plan of Covenant University Campus.

Source: Covenant University Master Plan.

## 7. Assessment of Route Network and Major Facilities Accessibility

In any built environment, while it is a complete misfit for building facilities to lack adequate access and even more absurd to infiltrate core campus with vehicular traffic we can begin to segregate functional facilities with utmost caution. There is therefore a need for an effective structural design in a place like an academic community which is more or less a 'pedestrianized community'- an environment where huge percentage of the residents walks on foot. Basically, from the point of view of an individual element the campus structure imposes upon itself a cordial relationship – to things outside, to a very larger extent. Roads and streets connectivity are adequately provided to each existing major element or building. The networks of circulation are at different scales or hierarchies of nodes. It is important to recognize networks of pedestrians' paths that run parallel to the motorized routes, except in very few areas. Table 1.0 provides the roads connectivity with the major campus edifices and their distances to the nearest building.

**Table 1. Main Building (Facility) Spatial location and inter-distance configuration**

<i>Facility/Major Building</i>	<i>Street location</i>	<i>Distant to the nearest building in Metre</i>
ALDC	Grace lane/ Wisdom way	25
Café 2	Goodness road	32
Guest House	Grace lane	35
Senate Building	Goodness road	120
Mechanical Eng	Wisdom way	60
Civil Eng Block	Wisdom way	60
EIE Block	Wisdom way	60
CDS Building	Off Mandate	208
CST Building	Mandate/vision close	60
Petro & Chemical Building	Vision Close	10
Lecture Theater	Vision Close	60
University Library	Mandate way	60
University Chapel	Mandate way	60

Source: Field measurements survey by the Authors (January, 2013)

The analysis of these measurements suggests that the elements in question are loosely connected to each other in term of trekable distance rather than by connectivity by road or routes of travel. The location of the senate building is considered very central enough for reasonable access from all major academic blocks namely: CST, CDS, Lecture Theater, the three engineering departments - EIE, Civil and Mechanical and the two others that is, Petroleum and Chemical which shared a common block along the vision close. The accessibility by vehicle from west end of the senate may not easily be achieved without first navigating the long distant through the ring road to make a turn. However, a future redesign of the arena for adequate vehicular access is in the offing. It is definitely going to be a reliable proposition if the adjacent lot is developed into a visitors' park, thereby helping to relief stress within the limited parking around the senate house. Moreover, it is an issue that borders on convenience, security or safety to free the senate house of dense parking of cars. Fire fighting van and Service crane must be well accommodated against any form of emergency need.

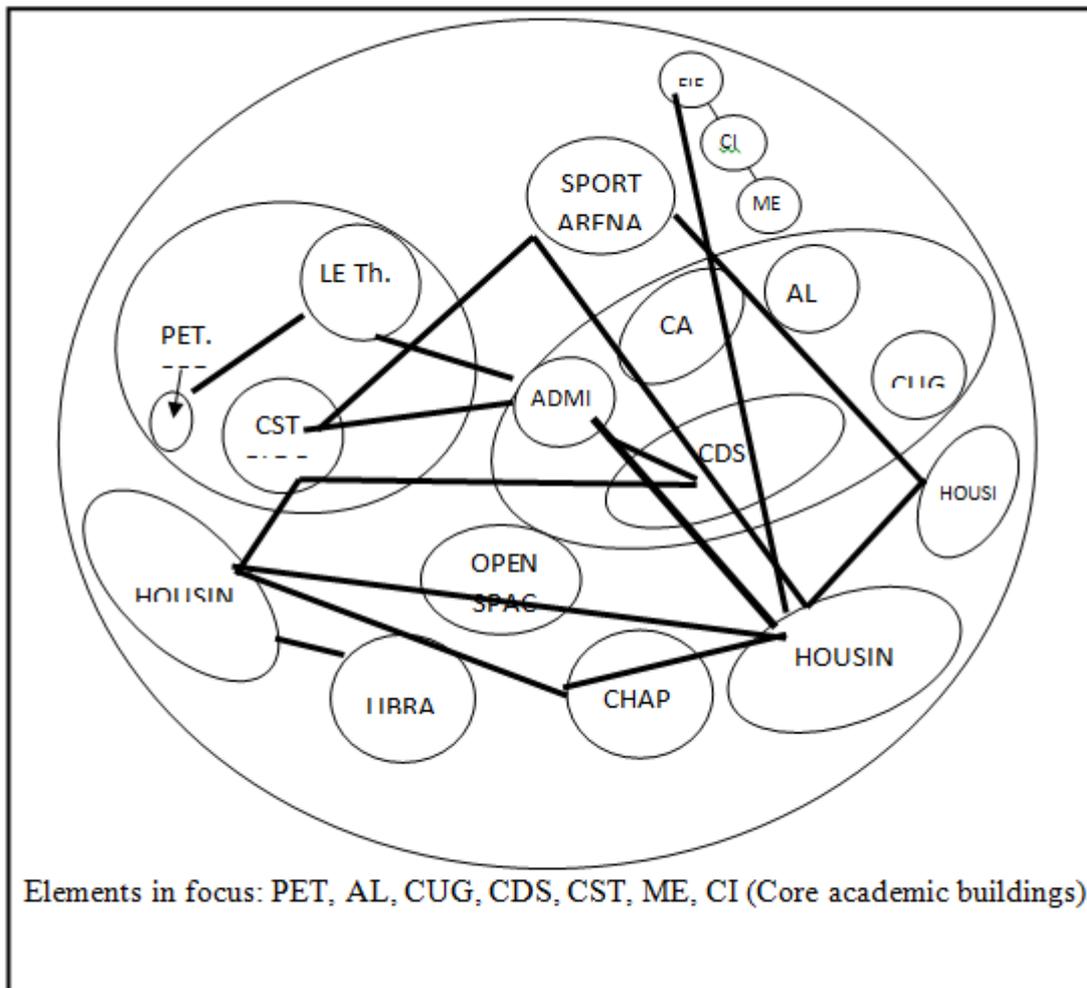


Fig.2.0: Covenant University Campus diagram and Graph Networks.

## 9. Conclusion and Recommendation:

Arising from this study are the various proposals that can improve the campus in a number of ways. These are further discussed here.

There is need for Policies that will boost social integration: Policies must be developed to strengthen the entire campus as a meeting place for not only academic activities but equally for social and cultural activities. The CU campus can further introduce a mixture of uses like outdoor recreation and commercial so as to re-sustain the spirited living of the residents and reduce out-of-town shopping. The university Shops should be planned with the mind that students, visitors and staff alike will patronize the centre, moreover it is of utmost necessary to know that residence staff are more permanent than either the students or visiting guests.

A pertinent feature of a harmonious campus environment is the development of idea of the living neighbourhood which possesses a good quality residential plan and can be served by all crucial local services and the likes. Residents within the community must be provided with all local services provision including leisure activities; again this helps to reduce any form of incidental stress build up.

It is a good thinking that the university of this status weighs objectively the benefits that could be accrued from decision to be compact structurally rather than other wise. Compact development often help beef up social relationships, spiritual cohesions and pedestrian

precincts which offer a measure to reducing long travel (walk) within the campus and minimize continuous interference of vehicular traffic with pedestrians and cyclists alike.

Larger areas of open spaces in the campus should be filled with structures that are akin to the activity dominating the area. This becomes imperative in order that the unique design is not seen as a romantic nonentity that can no longer magnetize attention or that which has lost its convenience attribute to the detriment of the overall community dwellers. Looking at the enormosity of investment on the campus (facilities wise), it is questionable whether the campus will attract people from outside, whose goal is not to work but basically constitute adequate critical mass that help sustain the whole variety of services and facilities like leisure, shops, hospitality and restaurants facilities in the place. Nevertheless since design and planning are continuous process, any proposed corrective measure can still be accommodated under a future redevelopment schemes.

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## Appendix 1



Plate 1: The University vista from the major road depicting the ring road and some major buildings



Plate 2: The Aerial view of CU Campus capturing the university chapel and the library at a distance

## Appendix 2

### Some Existing Plant (trees and shrubs) in CU Campus

<u>Plant Name</u>	<u>Family</u>	<u>Common Name</u>	<u>Yoruba</u>
<i>Acacia auriculiformis</i>	Fabaceae	Ear pod Wattle, Earleaf Acacia	
<i>Acalypha wilkesiana</i>	Euphorbiaceae	Copper leaf, Beefsteak plant	
<i>Adenanthera pavonina</i>	Fabaceae	Sandalwood, Red Bead Tree	
<i>Agave sisalana</i>	Agavaceae	Sisal hemp	
<i>Albizia lebeck</i>	Fabaceae	Lebeck Tree, Woman's tongue	
<i>Albizia zygia</i>	Fabaceae	West African Albizia	
<i>Alstonia booneii</i>	Apocynaceae	Devil Tree, Stool wood, Alstonia	Awin
<i>Anacardium occidentale</i>	Anacardiaceae	Cashew tree	Kaju
<i>Antocleista djalonensis</i>	Loganiaceae	Cabbage tree	
<i>Azadirachta indica</i>	Meliaceae	Neem Tree	Dogoyaro
<i>Bambusa vulgaris</i>	Poaceae	Bamboo	Oparu
<i>Bauhinia monandra</i>	Fabaceae		
<i>Bauhinia purpurea</i>	Fabaceae	Orchid tree, Camel's foot tree	
<i>Bauhinia tomentosa</i>	Fabaceae	Orchid tree, Yellow Bell Bauhinia	
<i>Blighia sapida</i>	Sapindaceae	Ackee	Isin
<i>Boungvillea</i>	Nyctaginaceae		
<i>Caryota mitis</i>	Aracaceae		
<i>Cassia fistula</i>	Fabaceae	Golden Shower Tree	
<i>Cassia roxburghii</i>	Fabaceae	Red Cassia, Ceylon Senna	
<i>Ceasalpina pulcherrima</i>	Fabaceae		
<i>Ceiba pentandra</i>	Malvaceae	Silk cotton, Ceiba	
<i>Cestrum nocturnum</i>	Solanaceae		
<i>Chrysophyllum albidum</i>	Sapindaceae	Star apple	Agbalumo
<i>Citrus aurantium</i>	Rubiaceae	Bitter Orange	Osan were
<i>Citrus sinensis</i>	Rubiaceae	Sweet Orange	Osan didun
<i>Citrus sp</i>	Rubiaceae	Orange,	Osan
<i>Cola acuminata</i>	Sterculiaceae	Bitter Kola	Orogbo
<i>Cola millenii</i>	Sterculiaceae	Kola nut	
<i>Cola nitida</i>	Sterculiaceae	Kola	Obi
<i>Cycas revoluta</i>	Cycadaceae	Sago cycad, Sago palm	
<i>Delonix regia</i>	Fabaceae	Flamboyant tree, Flame tree	Sekeseke
<i>Dialium guineense</i>	Fabaceae	Tumble tree, Velvet Tamarind	Awin
<i>Elaeis guineensis</i>	Aracaceae	African oil palm, Palm wine	Ope
<i>Ficus benjamina</i>	Moraceae	Weeping Fig	
<i>Ficus lyrata</i>	Moraceae	Fiddle-leaf fig	
<i>Ficus racemosa ??</i>	Moraceae	Fig tree	
<i>Garcinia cola</i>	Clusiaceae	Bitter Kola	
<i>Irvingia wombolu</i>	Irvingiaceae	Bitter Mango tree, Dika nut	
<i>Irvingia gabonensis</i>	Irvingiaceae	African Mango tree, Dika nut	Oro
<i>Livistona chinensis</i>	Aracaceae		

<i>Musa paradisiaca</i>	<i>Musaceae</i>	Banana	Ogede
<i>Musa sp</i>	<i>Musaceae</i>	Plantain	Ogede agbagba
<i>Musanga cecropioides</i>	<i>Moraceae</i>	Umbrella Tree, Cork wood	
<i>Newbouldia Leavis</i>	<i>Bignoniaceae</i>	Boundary Tree	
<i>Olax subscorpioidea</i>	<i>Olacaceae</i>		
<i>Oreodoxa oleracea</i>	<i>Arecaceae</i>		
<i>Peltophorum pterocarpum</i>	<i>Fabaceae</i>	Rain tree, Golden flame	
<i>Pentaclethra macrophylla</i>	<i>Fabaceae</i>	Oil bean tree	
<i>Persea americana</i>	<i>Lauraceae</i>	Medang, Avocado-pear	Eko-Oyinbo
<i>Platycladus orientalis</i>	<i>Cupressaceae</i>	Biota, Chinese Arborvita	
<i>Polyalthia longifolia</i>	<i>Annonaceae</i>	False Ashoka, Masqurade tree	
<i>Pycnanthus angolensis</i>	<i>Myristicaceae</i>	African nutmeg	
<i>Rauvolfia vomitoria</i>	<i>Apocynaceae</i>	Swizzle stick,	Asofeyeje
<i>Ricinodendron heudelotii</i>	<i>Euphorbiaceae</i>	False rubber, Njangsa	
<i>Senna siamea</i>	<i>Fabaceae</i>	Yellow cassia, Black wood cassia	
<i>Spondias mombin</i>	<i>Anacardiaceae</i>	hog-plum fruitstone kernel	
<i>Sterculia apetala</i>	<i>Sterculiaceae</i>		
<i>Syzygium malaccense</i>	<i>Myrtaceae</i>	Malay Apple, Mountain Apple	
<i>Tabebuia heterophylla var. pallida</i>	<i>Bignoniaceae</i>	White Tabebuia, White cedar	
<i>Tabebuia impetiginosa</i>	<i>Bignoniaceae</i>	Purple Tabebuia	
<i>Tecoma stans</i>	<i>Bignoniaceae</i>	Yellow trumpetbush, Tecoma	
<i>Tectona grandis</i>	<i>Verbanaceae</i>	Teak	
<i>Terminalia catappa</i>	<i>Combretaceae</i>	Tropical almond	Furutu
<i>Terminalia ivorensis</i>	<i>Combretaceae</i>	Black Afara, Idigbo	
<i>Terminalia superba</i>	<i>Combretaceae</i>	Afara	
<i>Treculia africana</i>	<i>Moraceae</i>	African bread fruit	
<i>Vigna unguiculata</i>	<i>Fabaceae</i>	Cowpea	Ewa
<i>Phaseolus vulgaris</i>	<i>Fabaceae</i>	Brown beans	
<i>Amorpha fruticosa</i>	<i>Fabaceae</i>	False Indigo bush	
<i>Afzelia africana</i>	<i>Fabaceae</i>	African mahogany, Afzelia, Lenke	Apa
<i>Arachis hypogaea</i>	<i>Fabaceae</i>	Groundnut, Peanut	
<i>Acacia scorpioides</i>	<i>Fabaceae</i>	Arabic Gum Tree	

**Source:** Omonhinmin Conrad (2012) & Field survey (2013)