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Inaugural Lecture Series 2008

TOPIC:

**SUSTAINABILITY OF
NIGERIAN BUILT ENVIRONMENT:
THE NEXUS OF ARCHITECTURE,
URBAN DESIGN AND THE
NATIONAL BUILDING CODE**

By

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University of Lagos Press

SUSTAINABILITY OF NIGERIAN BUILT ENVIRONMENT: THE NEXUS OF ARCHITECTURE, URBAN DESIGN AND THE NATIONAL BUILDING CODE

An Inaugural Lecture Delivered at the University of Lagos Main
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By

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Experience);

2) Research and Design of Architect and Urban

Designer (M.Arch.)

3) Service to the community for your judgment to decide on my

The subject matter of the lecture is the art and

science of buildings (architecture) and city building (urban

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PREAMBLE

The Vice-Chancellor, The Deputy Vice-Chancellor (Management Services), The Deputy Vice-Chancellor (Academic and Research), The Provost, (College of Medicine), The Registrar, other Principal Officers, Dean, (Faculty of Environmental Sciences), Other Deans present, Members of Senate, My Academic Colleagues, My Professional Colleagues, Our dear Students, Distinguished Ladies and Gentlemen. The word of God in the Book of Psalm 119: verse 105 states: **"Your word is a lamp to my feet, and a light to my path."** (NKJV)

On a hazardous journey, like life journey at all, the torch of flash light is most necessary. God's word is the true light to guide the believer through life (cf. Proverb 6: 23; John 8: 12). Furthermore, in Psalm 127: verse 1, the word of God says: **"Unless the Lord builds the house, they labour in vain who build it;..."** (NKJV)

This is one of two Solomonic psalms (cf. psalm 72). The builders of houses or cities or churches or empires all labour in vain without God's blessings.

MY PERCEPTION OF INAUGURAL LECTURE

I am standing here today to deliver the third inaugural lecture in the Department of Architecture and the fourth in the Faculty of Environmental Sciences since its inception in 1973! The main purpose of this public lecture is to enlighten the general public and the academic community my area of research, teaching and my service to the community for your judgment to decide on my "discharge" and "acquit certificate" from my Vice-Chancellor. My presentation will try to satisfy the following:

- 1) Research and Teaching at University, (*Working Experience*);
- 2) Research and Professional, as an Architect and Urban Designer (*Working Experience*); &
- 3) Service to Community and Humanity.

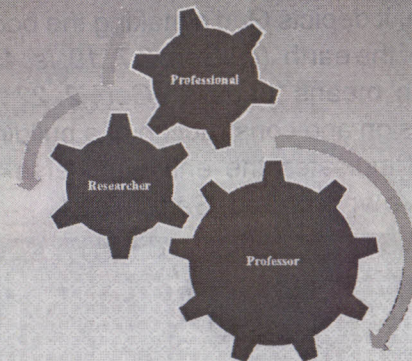
The subject matter of my specialisation is the art and science of buildings (architecture) and city building (urban

design). My researches are concerned with the methods and processes of structuring or re-structuring buildings and public spaces in cities with specific focus on their sustainability in its developmental growth. Any discussion of architecture and urban design which does not address environmental issues has little meaning at a time of declining natural resources, ozone layer destruction, increasing pollution and fears of the green house effect. As Wotton in 1969 puts it, "In these circumstances, any discussion of the aesthetics of either building or city designs in a pure or abstract form unrelated to environmental concerns could be described as superficial and rather like rearranging the deck chairs on the Titanic". Moughtin further says "**Architecture**" and its sister art, "**urban design**" are often said to consist of '**commodities**', '**firmness**' and '**delight**'. One aspect of '**commodities**' in architecture and urban development is '**sustainability**' (Moughtin, 1992). This, in effect, is a development, which contributes to the architecture of city's ability to sustain its social and economic structure.

The focus of my area of specialisation is therefore to explore the problems of defining quality in architecture and urban design but seen against a backcloth of the current concurs about the '**built-environment sustainability**'. The result of my work thus far may be classified into three aspects:

- (a) **Design Aspects of Urban Studies;**
- (b) **Theory in the Designs of Architecture & Urban Studies for Sustainability; and**
- (c) **Building Construction: Quality Service and Strategies of Reducing Costs.**

ARCHITECT & URBAN DESIGNER.



BUILT ENVIRONMENT

Genesis 2:15 "**Then the LORD God took the man and put him in the Garden of Eden to 'tend' and 'keep' it.**" (NKJV)

There are three responsibilities given to the man:

- (1) *Provision*, through the command to **tend** the garden, v.15;
- (2) *Protection*, through the divine directive to **keep** or **guard** the garden meaning "**Sustainability**"; and
- (3) *Leadership*, through the decision-making responsibility, vv.16 & 17. Man's (Architect/urban designer/Landscape designer) role as leader is confirmed in this leadership responsibility in the built environment within the context of **sustainable built environment**.

DESIGNER:

In Genesis 1: 1 "**In the beginning, God created the heavens and the earth.**" (NKJV) There are four Hebrew words which express the creative acts of God:

- (1) 'Bara', translated "created", is exclusively used with God

as its subject, indicating that only God can accomplish this activity. (cf. Gen. 2: 4; Ps. 89: 12; Is. 42: 5)

- (2) 'Asah' is a general term meaning "to make" or "to do". This is synonymous to Bara; also used for God's creation.
- (3) 'Yasar' means "to fashion" and describes a potter's action; it depicts God's making the body of man from the dust of the earth. (cf. Gen. 2:7, 19; Is. 45: 18)
- (4) 'Banah' means "to build", Gen. 2: 22; it is common term for design and construction of a building. "Heavens and Earth" indicates the entire universe and previews the creative work of God, Gen. 1: 3-31.



And God created, out of nothing, by saying: **"Let there be...";** so an Architect creates objects on vacant/virgin spaces; they are therefore next to God! Furthermore, in Genesis 2: 8-14-**"The LORD God planted a garden eastward in Eden ..."** NKJV. This garden was named, **'Garden of Eden'** meaning **'Garden of Delight'**.

URBAN DESIGNER:

In Revelation 21: 2 **"Then I, John, saw the Holy City, New Jerusalem, coming"** NKJV; also in Revelation 21: 10 **"And**

he carried me away ..., and showed me the great City, the Holy Jerusalem" (NKJV)

AN IDEAL URBAN SETTING (IMAGEABLE URBAN DISTRICT)



New Jerusalem functions as the focal point of worship and activity for all eternity. The renovation of the heavens and the earth, v.1; *II Peter 3: 10, 11*; the City of God, *Rev. 22: 5*; the paradise of God, *Rev. 2:7*, where every believer intends to live forever, *Rev. 22:14*. (cf. *Rev. 21: 9 22: 5*).

LANDSCAPE DESIGNER:

In Genesis 2: 8-14; **"The Lord God planted a garden eastward in Eden, and there He put the man whom He had formed river is the Euphrates."** (NKJV)

AN IDEAL ENVIRONMENTAL RIVER-SCAPE SETTING



AN IDEAL ENVIRONMENTAL RIVER-SCAPE SETTING

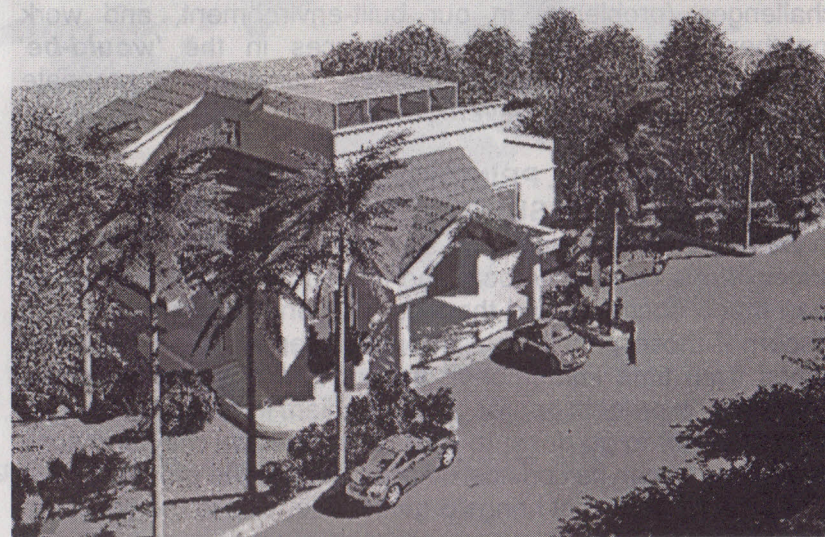


A garden is a sheltered, protected spot. This garden was named, "Eden" meaning "delight". This perfect garden contained all that man needed:

- (1) Food for sustenance, v.9;
- (2) work in caring for the garden, v.15;
- (3) creative leadership in the dominion over other creature;
- (4) limitation for developing the moral nature of man; and
- (5) gift of the woman as helper /companion, v. 18-24, (cf. Ez. 47:12).

ARCHITECT:

I Corinthians 3:10, 11 **"According to the grace of God which was given to me, as a wise 'master builder' I have laid the foundation, and another builds on it. But let each one take heed how he builds on it. For no other foundation can one lay than that which is laid, which is Jesus Christ"** (NKJV).



From the above, I believe, **God** is the '**Ultimate Master Builder**', where the **concepts** of '**Architecture, Urban Design and Landscape Design**' are formed. Designers, of which I am one, are therefore next to Him as '**Junior Master Builder**'! (cf. Matt. 7:24-27; Luke 6:47; Heb. 11:10).

In summary, sir, a number of resolutions can be drawn from the course of this presentation that pertains to the **concept of sustainable built-environment**.

Firstly is our argument that has touched the weak strings of our **built-environment planning**; their superficial efforts have failed to bring necessary **order** into the **built-environment**. An advocate is hereby made for the **architectural understanding of our built-environment development**, which calls for the **creative mind**.

Secondly, the quest towards **sustainable development** in our urban areas puts the spotlight on the **built-environment** (urban or city) **design** and the **construction industry** (building-industry).

And finally, a collective effort must be made, by all professionals in the **built-environment** to work hand-in-hand to solving the challenges (problems) in our built-environment, and work together to **prevent** such occurrences in the '**would-be**' (undeveloped or unoccupied) areas, using the appropriate concept of **sustainable development**.

THE FUNDAMENTAL PRINCIPLES OF BUILT ENVIRONMENTAL ISSUES

In the search for principles, we should not be satisfied with such principles as have only local and limited bearing, or are mere man-made doctrines and theories. Our endeavour must be to discern if those principles which are inherent in the nature of things from time immemorial, are valid in any circumstance. Therefore, in order to approach our problem from the right angle, it is important to go down to **nature**, so that we may find such processes as can be considered analogous to the process of our built environment, that brings organic order vital to the growth of these communities.

Through most of history, the human population has lived a rural lifestyle, dependent on agriculture and hunting for survival. In the 1800, only 3 percent of the world's population lived in **urban** areas. By 1900, almost 14 percent were **urbanites** with only 12 cities having more than 1 million inhabitants. In 1950, 30 percent with 83 cities were over a million. In 2000, about 47 percent lived in urban areas with about 2.8 billion inhabitants; there were 411

cities over 1 million. However, **urbanization** is occurring rapidly in many less developed countries. By 2030, it is projected that 60 percent of the world population will be urban, and that most urban growth will occur in less developed countries. Figures 1 and 2 below show the population growth in some selected largest cities of the world, Lagos, Nigeria inclusive. Figure 3 shows the top 10 largest urban agglomerations in 1950, 2000, 2015 (projected) and the comparison of urbanization between the more developed cities of the world. Furthermore, the figure projected what these growths will be in the nearest future.



Fig. 1: Largest Urban Agglomerations, 1950, 2000, 2015

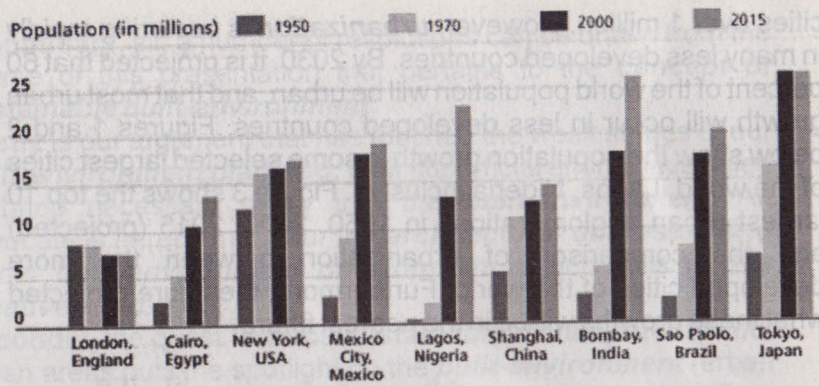


Fig. 2: Growth of Urban Agglomerations 1950 - 2015

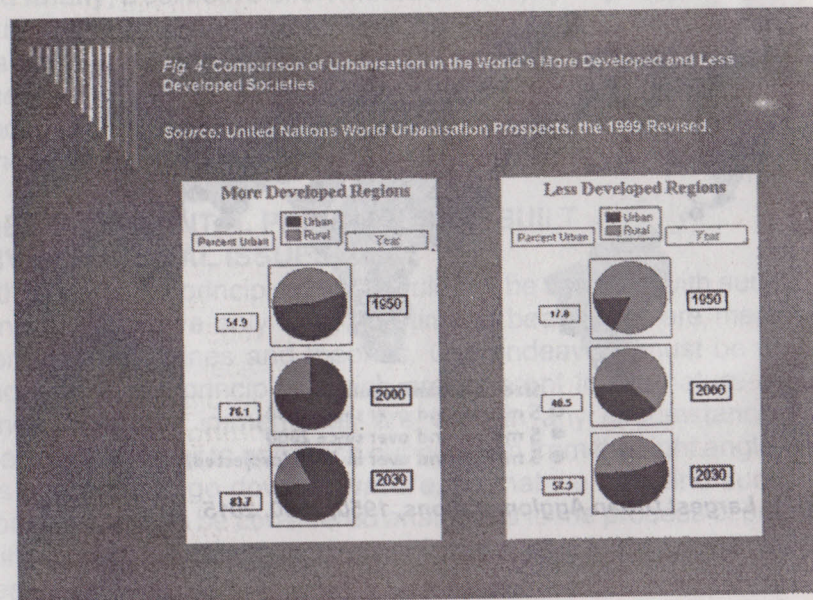


Fig. 3: Comparison of Urbanisation in the World's More Developed and Less Developed Societies

Source (Fig.1,2&3): United Nations World Urbanisation Prospects, (1999 Revised)

There is a very big question related to the less developed World Urbanization: **will it prove beneficial for people's lives?** The answer to this can only be **yes** if the less developed (of which African countries are in majority) urbanization can provide enough productive employment for the rapidly growing population of its cities. The major question addressed in this paper is: **should Environmental Professionals focus on 'built environment disaster prevention or on built environment development management?** Another question which this paper tries to answer is: **Who is responsible for the development of our built-environment, or who should decide on the nature of good design in the built environment?** In the pursuit of providing solutions to these salient questions, the earlier works of this writer, through the reports presented to the Lagos State Government by the Nigerian Institute of Architects (NIA), Lagos State Chapter and some of the communiqué arising from the 2005 summit of the national body of the NIA lead us to the issue of **Built Environmental Control System** which is the precursor to the **National Building Code**.

A research carried out by Hall in 1990 established Architects' views and grievances which were earlier summarized into ten items in Okedele's paper presented at the N.I.A's **"Built Environment Summit 8th - 10th February, 2005"**. In the paper, it was further recommended that our physical development organs of the government should, as a matter of urgency, set out in clear terms, **the difference between "Planning Permit" and "Building Regulation Approval"**.

Elkin Saarinen *et al* in 1991, in their book: **"Reviving the City"**, debated on the issue of **'professional problems and practical technicalities in town-building'**; he endeavoured to explain the physical order of the urban community much in the same manner as one understands organic order in any living organism. His primary aim was to discover the fundamentals of all town-building, in order that those fundamentals may be adapted to existing conditions and a strong foundation may be built for days to come.

Two primary facts have therefore evolved from the aforementioned reports and research findings: the **Role Conflicts, Value Conflicts and Professional Conflicts** in the development of our built environment process, on the one hand, the need to move from the “**Prescriptive Standard Based Approach**” to a broader “**Functional and Efficient Regulations or Code**”; that addresses public concerns (i.e. safety, comfort, health e.t.c.) in order to give valuable *legitimacy*, on the other hand.

The advocacy of this research, in clear terms, are two movements that are supportive of each other: **the sustainable development that gives rise to an Environmental Development Process (FUNCTIONAL LEGITIMACY); and Environmental Design Process that gives rise to “URBAN FORM” which eventually gives rise to the idea of “Sustainable Development”**. Its foundation is *physical, social, political, economic, and cultural necessities* which are now being experienced as “**environmental crises**” both at individual national levels as well as global scale.

Saarinen *et al* in their book: “*Reviving the City*”, further brought an analogy that dwells in the realm of nature, “... see what the microscope is able to reveal.” He pointed out that not much manipulation is needed with the microscope to discern an organic life; two phenomena: “...the existence of individual cells, and the correlation of these cells into cellular tissue. In itself ...”, he continues, “... this revelation might seem an insignificant matter, yet it is amazing to learn that the whole universe, from the most microscopic of the utmost macroscopic, is constituted along this dual thought of individuals; such as of the correlation of these individuals into the whole. Furthermore, one learns that vitality in all life manifestation depends, first, on the quality of the individual and, second, on the quality of correlation. Consequently, there must exist two fundamental principles according to which these two mentioned qualities are constituted so as to foster and maintain vitality in the course of things. In fact,

by a closer study of natural process ...”, he concluded, “...we will perceive two fundamental principles, “**Expression**” and “**Correlation**” of which the former principle brings individual form-shaping into true expression of the meaning behind these forms, and of which the latter brings the individual forms into organic correlation”.

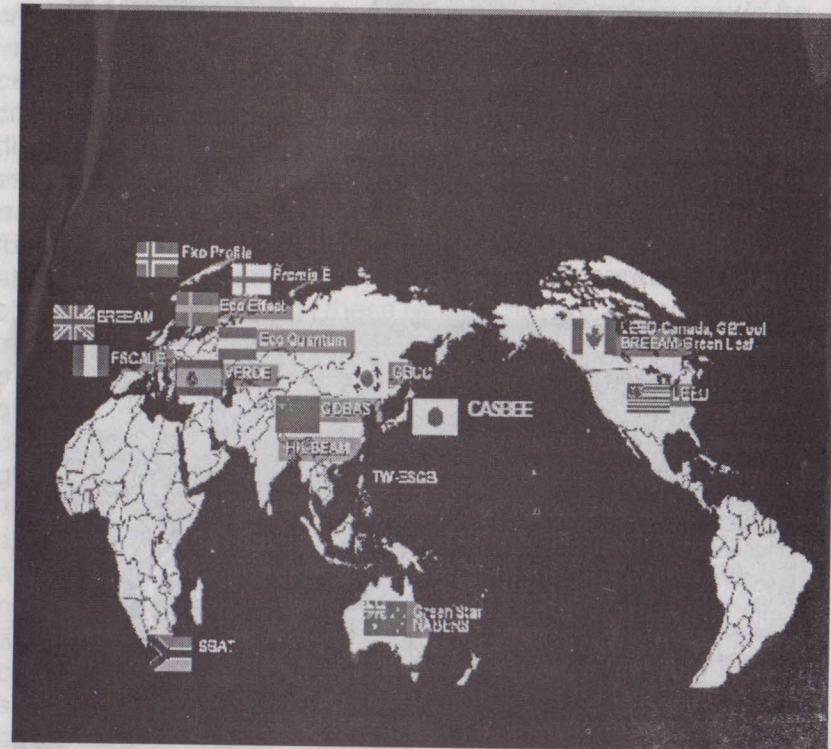


Fig. 4: Assessment Tools of Building Environmental Performances around the World
Source: <http://www.sb05.com>

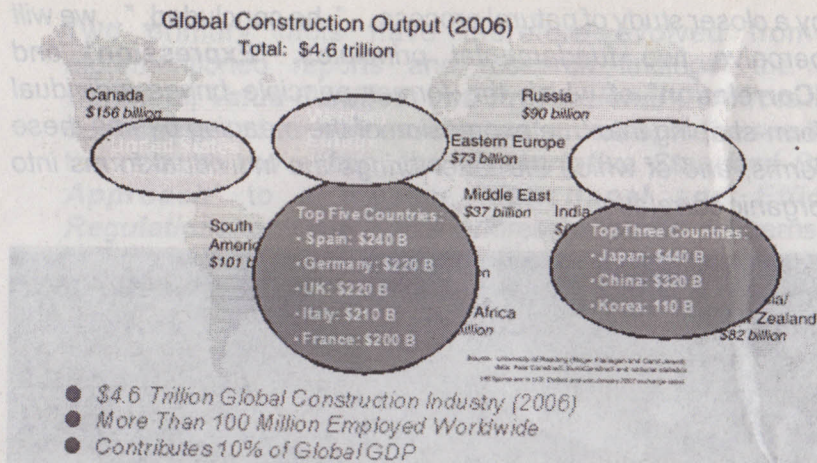


Fig. 5: The Global Construction Industry Today
Source: <http://www.sb05.com>

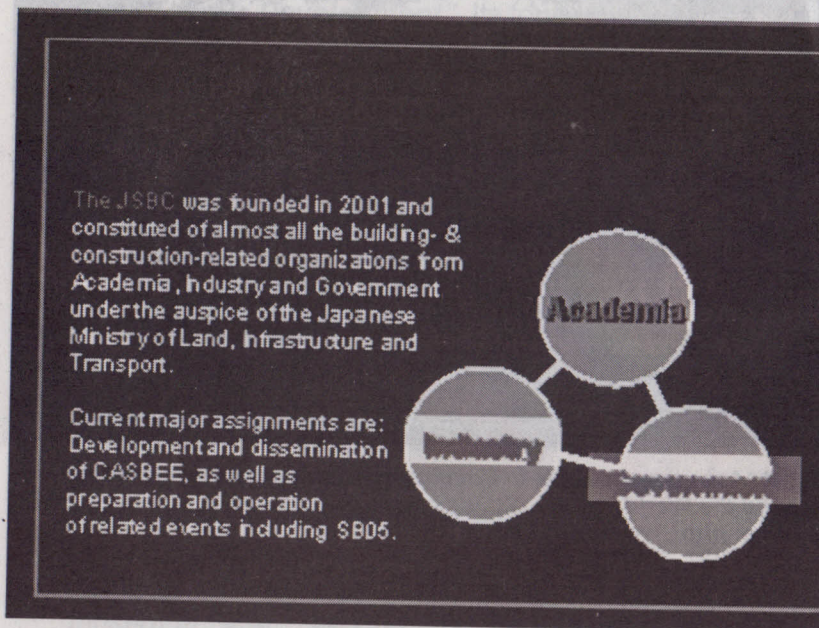


Fig. 6: Japan Sustainable Building Consortium (JSBC)

Source: Prof. Shuzo Murakami, Chairman, Musashi Institute of Technology, Japan

We may, therefore, round-up by saying, **any form-manifestation in nature is a true expression of the meaning behind this form-manifestation; and this is a rule from which there is no exception in the entire universe.** It is a **"principle of expression"**. For, in case this principle of expression is disregarded – as it is so often the case by those who erect all kinds of trashy buildings **the consequences in the city's case are bound to be as devitalizing as they would be in the case of the tree, if false cells were brought into its cellular tissue.** In the same vein, particularly in the designing of cities, we must learn to understand that, it would prove just as disastrous to the city, if **the principle of correlation** did not exist, especially in **the design of the landscape** to the **"city of nature"** if the same **principle of correlation** should cease to function. **The Principle of Organic Order**, when speaking about **expressive and correlative tendencies** in nature's form-shaping, it is obvious that these tendencies are not independent trends, but two phases of the same process; namely, of the process toward **"organic order"**. In other words, the principles of expression and correlation are so independently functioning principles; but rather, **the daughter-principles** of that all-governing **mother-principle of "organic order"**—is, in fact, the very principle of **architecture in the universe**. According to this principle of architecture, nature's manifestations are carried out and kept in function. For if this is true, no matter whether it happens in the **"microscopic tissues of cell-structure"**—where cancer causes disintegration—or in the hearts of the large cities of today where **"compactness and confusion"** cause slums to spread. In the light of these fundamental principles one can follow the development of towns and cities during the past, and one is able to understand the basic reasons why these developments were successful or unsuccessful. Successful results sprang from an instinctive awareness of these principles, whereas unsuccessful outcomes were due to a lack of this sense. For this reason, when the question arises as to why the towns and cities of today are so frequently **heterogeneous and discordant**, the answer can be found in the fact that these principles have either been **forgotten**, or **unperceived**. Again, when it is asked **how the growth of towns and cities can be**

conducted toward greater expressiveness and better unity, the answer is, and must be, that this can be achieved only when the town designers-and all the co-operating designers and architects for that matter have absorbed the meaning of these principles into the very **blood of their veins**.

In summary from the beginning, we may now recall the **six major points** that have been discussed, as essential issues in the pursuance of finding solutions to our built environment:

First, the importance of adequate built environment development from the point of view of the whole nation's welfare, material and cultural.

Second, it was made clear that social research is a necessary background and also constitutes a permanent institution so as to fertilize the built environment's continuous physical development. The cultural aspect of the social problem is particularly stressed.

Third, the comprehensive physical or civic improvement and development must consider appropriate means and methods. In this regard, superficial physical (town) planning was found inadequate for its two-dimensional methods of approach, and are not only inadequate, but can not yield satisfactory results: better thorough-going and dynamic built environment building, by means of three-dimensional approach of built environment design (urban design) had best taken its place.

Fourth, three fundamental principles of built environment building or urban (city) design that guarantees satisfactory solutions and lasting results are discussed: principles of *expression*, *correlation* and *organic order*; of which the last is the all-governing mother principle which is the fundamental principle of architecture in all creation.

Fifth, the architectural nature of built environment building is emphasized, particularly when one considers the training of architecture that adequately satisfy the built environment's

requirements as a product of *human art* which can be *physically*, *spiritually*, and *culturally healthy*. Consequently, any investigation of built environment building matters, to be accurate and significant, must be essentially an investigation of architectural standards.

Sixth, Sustainable Built Environment Development is a concept in global setting and is hereby the focus of this presentation, featuring: **Social, Ecological, Cultural, Self-Sufficiency, Futurity, Equity, Participation, Economical and other Environmental Facets**. The potential and profitability of promoting sustainable development is raised for discussion.

Furthermore, the discuss on the Brundland Report on Sustainable Development (S.D.) implies both *inter- and intra-generational equity* within a framework of environment development, which does not destroy the planets environmental support system is also presented.

SUSTAINABILITY: THE CONCEPT

- As earlier summarised above, Sustainable Development is a concept in African setting, and is hereby presented; featuring social, ecological, cultural, self-sufficiency, futurity, equity, participation, economical and other environmental facets. The potential and profitability of promoting Sustainable Development is raised for discussion.
- The discourse on the Brundland Report on sustainable development which implies both *inter- and intra-generational equity* within a framework of environment development, which does not destroy the planets environmental support system is also presented for consideration.

Without focusing on the academic debate and the possible contradictions within the concept of sustainable development, the author of this work has endeavoured to briefly discuss it.

Sustainable development has several definitions, such as:

1. "**development** that meets the needs of the present without compromising that ability of future generations to meet their own needs" [the Brundland Report, WCED, 1987];
2. "**improving the quality** of human life while living within the carrying capacity of supporting ecosystems" [Caring for the Earth, IUCN/UNEP, 1991];
3. "development that delivers basic environmental, social and economic services to all residences of a community without threatening the viability of natural, *built and social systems upon which the delivery of those systems depends*" [International Council for Local Environmental Initiatives, 1996];
4. "**determined to promote** economic and social progress for their peoples, taking into account the principle of sustainable development and within the context of the accomplishment of the international market and of reinforced cohesion and environmental protection, and to implement policies ensuring that advances in economic integration are accompanied by parallel progress in other fields" [Amsterdam Treaty, 1997];
5. "it is about ensuring a **better quality of life** for everyone, now and for generations to come." [Consultation paper 3 on a UK Strategy for Sustainable Construction, 1998]

DEFINITION

A generally accepted definition is found in the Brundland Report on Sustainable Development: "**Sustainable Development** is development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs. It contains within it, two key concepts: the concept of needs, in particular, the needs of the world's poor, to which overriding priority should be given: and the idea of limitation imposed by the state of technology and social organization in the environment's ability to meet present and future needs". (Brundland Reports, 1987 p. 43)

There are three key ideas contained in this definition: **Development**, **Needs**, and **Future Generations**. Blowers in 1993 analyzed and expatiated on these three key ideas.

"**Development**" is different from growth; while growth is a physical or quantitative expansion of the economic system". Development is therefore, a qualitative concept, which is concerned with improvement, progress that includes: cultural, social and economic dimensions.

The term "**Needs**" brings us to the idea of distribution of resources: meeting the basic requirements and agitation of all, and extending to all opportunity to satisfy their aspiration of a better life.

"**Future Generations**" introduce the concept of inter-generational equity. As the report of the Department of Environment, London put it, "... we have a moral duty to look after our planet and to hand it on in good order to future generations. "Sustainable development", the report confirms, "therefore, means a movement towards greater social equity both moral and practical reasons".

GOALS AND OBJECTIVES

Blowers in his own case in the same year 1993 further discussed the "**goals & objectives**" of sustainable development. Here is the summary to guide all decision-making and policy generation.

Goal No. 1: Resource Conservation Objectives:

- "to ensure the supply of natural resources for present and future generations through
- the efficient use of land,
- less wasteful use of non-renewable resources,
- their substitution by renewable resources wherever possible and the maintenance of biological diversity".

Goal No. 2: Built Environment Objective:

- "to ensure that the development and use of the built environment respects and is in harmony with the natural environment and that the relationship between the two is

designed to be one of balance and mutual enhancement".

Goal No. 3: Environmental Quality

Objectives:

- "to prevent or reduce processes that degrade or pollute the environment,
- to protect the regenerative capacity of ecosystems, and
- to prevent developments that are detrimental to human health or that diminish the quality of life".

Goal No. 4: Social Equality

Objectives:

- "to prevent any development that increases the gap between rich and poor, and
- to encourage development that reduces social inequality"

Goal No. 5: Political Participation

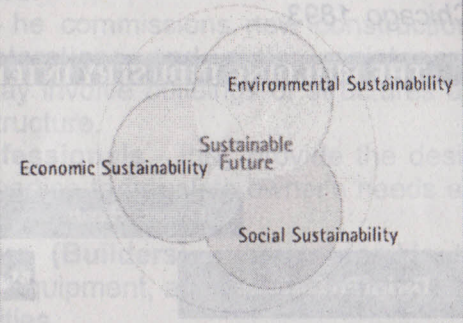
Objective:

- "to change values, attitudes and behaviour by: encouraging increased participation in political decision making, and in initiating environmental improvements at all levels from the local community upwards." Blowers [1993].

ACTIONS FOR SUSTAINABILITY

Common parlance has it that if you tell me who your friends are, I will tell you what you are; and if you show me your city, I will tell you what the cultural aims of its population are. The implication of these old truths was probably felt long before they became popular. The city is an open book which contains the aim, ambitions and aspirations of the inhabitants therein. When it is built in a disorderly manner and the inhabitants are indifferent to its appearance, they automatically reveal this attitude. They are like **the unwashed, unshaven and untidy person** who enters a social gathering and makes **a poor exhibition of himself.**

1) GAPS BETWEEN THE THREE ISSUES OF SUSTAINABILITY



Environmental Sustainability
...for providing well-balanced
quality of life

Fig. 7: Bridging Three Gaps - Principles of Sustainable Urban Development
Source: <http://www.sb05.com>

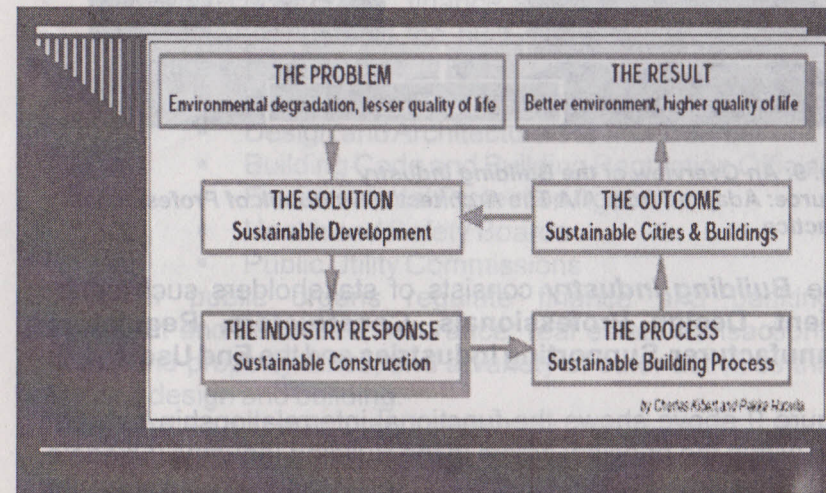


Fig. 8: Simplified Road Map for Sustainable Construction
(Boudreaux et al. 1998)

Source: www.environment.detr.gov.UK/sustainable/consult1/index.htm
The Building Industry

"Make no little plans, they have no magic to stir men's blood; make big plans, for a noble document once recorded will never die". Daniel H. Burham, the Chief Architect Planner of Chicago 1893.

THE BUILDING INDUSTRY INTER-RELATIONSHIP

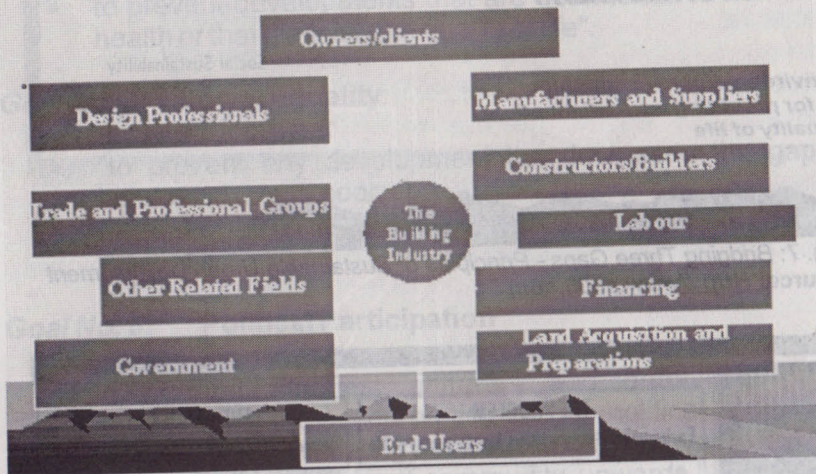


Fig. 9: An Overview of the Building Industry
Source: Adapted from AIA The Architect's Handbook of Professional Practice

The **Building Industry** consists of stakeholders such as the **Client, Design Professionals, Constructors, Regulators, Manufacturer, Supporting Industries** and the **End Users**.

Figure 9 above shows the functional interrelationship between and within the principal actors in the Building Industry, (Okedele, p.6). Similarly, Figure 10 shows the relationship between the gaps that exist between the principal actors and the end-users, owners or the clients for mobilization and promotion of quality services.

Figures 9 and 10, in effect, give proper definition or explanation of a true **Building Industry**. Figure 9 particularly shows the

principal actors in the **Building Industry**, these are: the **owner(s), designers and their consultants, constructors, regulators, and end-users**.

1. **The Owner(s)** – he commissions new constructions, renovations, restorations and major maintenance projects which may involve buildings or structures and associated infrastructure.
2. **The Design Professionals** – they provide the design and technical expertise to translate owner's needs and aspirations into built-environment.
3. **The Constructors (Builders)** – they assemble the labour, materials, equipment, and management to build the designed facilities.
4. **A Series of Supporting Industries** – they provide the land, financing, insurance and goods and services necessary to build.
5. **The Regulators** – These public and sometimes private organs regulate the planning, land use development, design, construction, finance and professional practice and the operation of the built environment. This group includes, for example:
 - Planning and Zoning Boards
 - Design and Architectural Review Boards
 - Building Code and Building Regulation Officials
 - Environmental Protection Agencies
 - Health and Safety Boards
 - Public Utility Commissions

Still other public organs regulate finance and banking, investment and securities, insurance, real estate transactions, income and property taxes, and a variety of other activities that influence design and building.

6. **The End-Users** – they inhabit the constructed building, the built structures and the spaces in and around them. Last, though not least, among the principal actors in the building industry are the millions of citizens: young and old, naïve and astute, who inhabit our buildings and places. It is this group, those who live *in* our buildings as well as those who line *with* them every day for whom all of the other principals in the building industry work; and it

is this group that they serve.

THE KEY PLAYERS AND THEIR ROLES

The Seven-Major Professions in the Building Industry and where they Practice

The seven recognised professions in the Building Industry are: Architecture, Building, Engineering (Civil, Structures, Mechanical and Electrical), Physical (Town) Planning, Estate Surveying, Quantity Surveying and Surveying (Land, Water and Air).

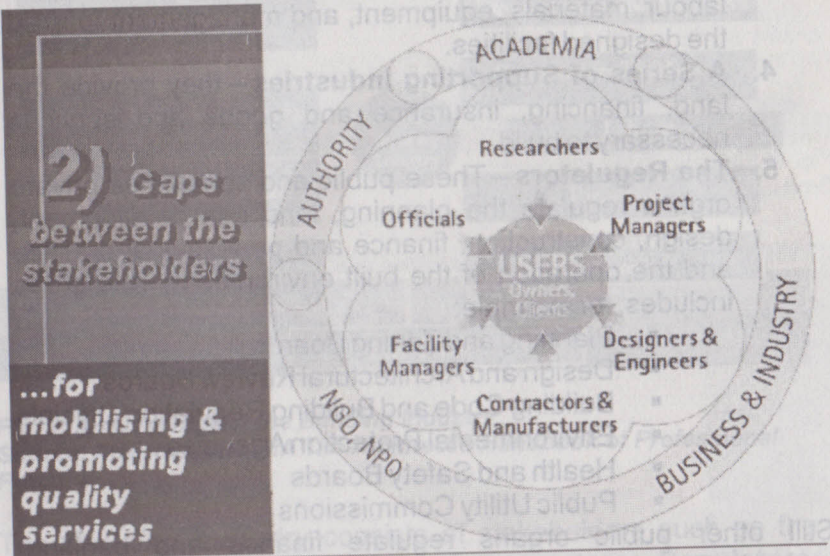


Fig. 10: Bridging Three Gaps - Principles of Sustainable Urban Development
Source: <http://www.sb05.com>

Goal of the Professions

The major goal of all Professionals in the Building Industry *is to mobilise and inform membership for quality services* as seen in figures 9 and 10.

These Professionals are recognised to practice as: Consultant in Practice Firms, Public Servant, Design-and-Built, Academicians,

Sales and Manufacture of Building Materials, Value Engineering, Facility Engineering, Technical Staff of Works Department, Journalism, Politics, Freelancing, Project Management, just to mention a few.

As suggested earlier, in the *Building Industry*, clients are a diverse group. For their part, professional firms take a variety of approaches and attitudes toward their clients. Most firms agree, however, that *good client-designer relationships* are essential to successful projects. An understanding of the process by which a project is accomplished can lead to *a successful product, a satisfied product, a satisfied client, and a rewarded designer and practice.*

THE FOUR BASIC PHASES/STAGES OF BUILDING PROCESS

All building production goes through the four stages; some may, however need some additional stage(s), depending on the scale and complexity. By and large, it has been said by Winston Churchill, past American president, "***We shape our built environment and our built environment shapes us.***" While there exist some rift or what may be called '***professional conflicts***' among the seven professionals in the building industry, on their *roles* and *values* in shaping lives, there is little doubt that we are affected by our built environment, particularly when they are ***exciting*** or ***inspiring***, and also when they do not provide ***the comfort, accommodation*** or ***economy*** that we expect.

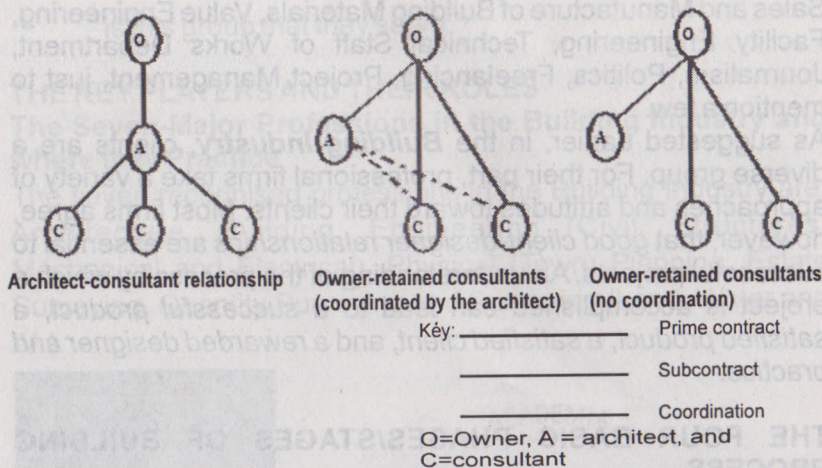


Fig. 11: Inter-Design Professionals' Relationships with the Client
Source: Okedele, 'Niyi: "Understanding the Concept and Overview of the New National Building Code" NIA BGM November, 2007.

REDEFINITION OF BUILDING INDUSTRY

From the above discourse, there is need for a redefinition of the Building Process, whereby the existing *rift* in terms of *roles* and *values* called **professional conflicts** are addressed as well as the inclusion of the present near total absence of '**maintenance culture**'.

The notion of what constitutes a successful project has been much discussed in the *project management field*. Evaluation of success has often paid inadequate attention to the perspective of the user and general public in terms of *welfare* and *safety* over the life cycle (whole life considerations) of the facility.

The prevalence of this situation in Nigeria has brought to the fore, the need for a redefinition of the building industry to integrate requirements for maintenance. It has also become necessary to adopt measures that could ensure that deliverables at the end of each of the four stages (*pre-design, design, construction and post-construction*) meet established performance standards by introducing a kind of **permit or approval**.

The current edition of the NBCode captures the essence of whole life considerations with emphasis on *performance*, rather than *prescriptive standards*. The assessment of the professionals and other key stakeholders can therefore be made using the performance "*enforcement*" criteria stipulated in PART III of the NBCode. This is also applicable to the building structures. The redefinition of the Building Industry is such that will include those four stages as discoursed: **pre-design, design, construction and post-construction stages**.

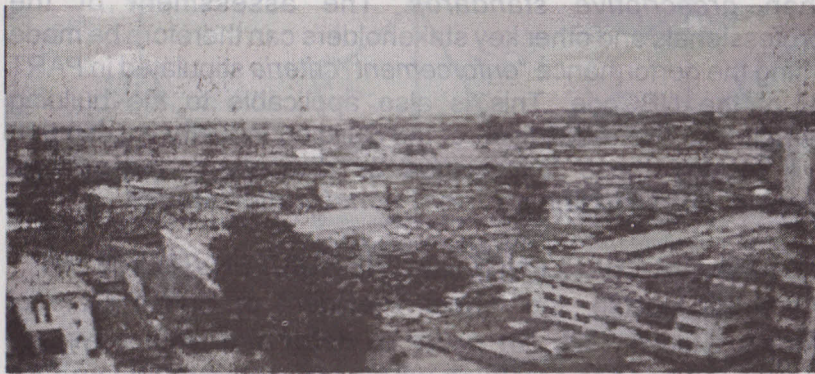
THE MAJOR CHALLENGES IN THE BUILT ENVIRONMENT

Abraham Lincoln, the former President of United State of America, once said, "**In order to determine where we are going, we need to establish where we are presently and for us to know where we are we should know where we are coming from**". That the built environment in most urban centers in Nigeria is very problematic is a known fact that we all bear with; majority of these challenges (problems) are characterised in most urban centers. The challenges are: *Urban Renewal, Slum Clearance, Land Acquisition, Decent Accommodation, Building Development, Traffic Congestion and Pollution* are very much with us, most of which are characterised with *Collapse of Buildings, Erosion, Flooding and Filthy Townscape*, to mention a few

EXISTING CHARACTERISTICS OF OUR BUILT ENVIRONMENTS IN NIGERIA: WATER FRONT



EXISTING CHARACTERISTICS OF OUR BUILT ENVIRONMENTS IN NIGERIA: CITYSCAPE



This present situation certainly calls to question, the **capacity of the State and Local Planning Authority** to maintain and sustain the Urban Environment. Our **Planning Regulations** and **Building Control Laws** are frequently side-tracked for convenience and selfish reasons to the detriment of the general public, they do not only need to be reviewed but the enforcement strategies and management needs to be overhauled.

This brings us to asking ourselves certain questions! **What is wrong with us? Is it our Law or our Law Enforcement Agency?** A witness to these posers can be obtained from our Built Environment Scenario. The **'unimageable'** existing characteristics of our built environments, especially in the urban centres in Nigeria is appalling.

THE STATE OF OUR BUILT ENVIRONMENT: BUILDING COLLAPSE-LAGOS ISLAND, 2006



THE STATE OF OUR BUILT ENVIRONMENT: BUILDING COLLAPSE-DIAMOND BANK, OGUDU RD. OJOTA, LAGOS (19-04-08)



1. *Planlessness of our towns and cities;*
2. *Dearth of referenced design standards for Professionals;*
3. *Use of non-Professionals and quacks;*
4. *Lack of maintenance culture;*

5. *Urban sprawl, built environment abuses and other disasters;*
6. *Uncoordinated interaction between professionals in the Building Industry;*
7. *Professional conflicts (role, value & professional practice);*
8. *Over – stretching of Urban Cities facilities causing fire infernos;*
9. *High market prices and inappropriate use of building materials;*
10. *Incessant collapse of buildings;*
11. *General attitude of enforcement of our laws (the Building Code & Regulations);*
12. *Overlap of roles and functions of the Decrees that establish the professional bodies;*
13. *Training of the professionals and problem of factions;*
14. *Problems in the Civil Service e.g. bureaucratic bottlenecks in the system, corruption, nepotism and tribalism;*
15. *Unqualified and incompetent enforcement officers;*
16. *Unapproved designs that are being executed; Low level of public awareness and enlightenment (Okedele, Adio-Moses and Obi, 2007).*

ANTIDOTE TO THE CHALLENGES

1.) DESIGN

Definition

Jones in 1966 describes design as, “**The performing of a very complicated act of faith**”. “**To initiate change in man-made things**” could be a definition of design but does this definition really help? Such a definition is too general and abstract and vague to be useful in helping us to understand design.

Design Profession

'Expertise, training and skill', help to define a profession as: 'those vocations that “**profess**” to have a specialised territory of knowledge for practice'. Professions are based specifically on fields of higher learning. Universities, thus, introduce prospective professionals to their field's discipline, theory and body of

knowledge. Later, some form of internship where practical skills and technique are mastered is obtained before the certification to practice is given.

2.) URBAN DESIGNER

The Urban Designer is primarily helping to create a future world, and in this sense, his task is inevitably confounded by many doubts and uncertainties.

In summary:

1. The process is endless
2. There is no infallibly correct process
3. The process involves finding as well as solving problems
4. Design is always based on inevitably subjective value judgement
5. Design is a prescriptive activity
6. Designers work in the context of a need for action.

Definition of urban/ city/ town design

□ urban design may be defined as the architecture of the city design (or city building). In other words, architecture is seen as a subset of urban design.

□ Robert Beckley, in 1979 defines “urban design” as “the bridge between architecture and urban planning professions”.



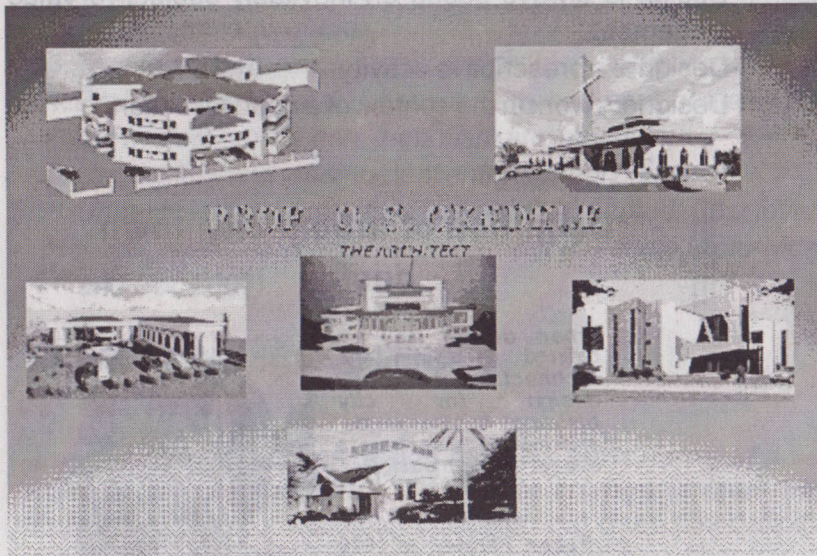
Source: Okedele & Adebayo, “The Concept of Sustainable Architecture of City - Building in Nigerian Urbanisation, 2007”

3.) ARCHITECTURE

Although *all professions* are based on a *balance of technical and indeterminate knowledge*, some stresses one over the other.

Architecture emphasises an *artistic* that is relatively inexplicable domain of expertise, *design*, which is the core of the architects' identity. **Design** requires *rational knowledge* of how buildings are put together, how they will function, historical models for building typed, materials, mechanical systems, structures, and so on. In addition good architectural expert possess; *aesthetic sensibility, talent, and creative ability*.

"A good brief, a good client and a good architect' are at the root of good building".



There are six broad principles for a sound Architectural policy. These are:

1. Order and Unity (creates coherence and intelligibility);
2. Expression (of function);
3. Integrity and honesty (of design);
4. Consideration of plan, section and elevation;
5. Details (including ornaments etc); and

6. Integration (with surroundings), embracing sitting, massing, scale, proportion, rhythm and materials.

SIMILARITIES BETWEEN ARCHITECTURE AND URBAN DESIGN

Every society in history has faced the problem of shaping the environment it inhabited. So clearly did some societies recognize this social task that they developed terms for it in their own languages? The French, for example, speak of '**Urbanisme**' and '**Paysage**'. The Germans refer to '**Stadtbaukunst**' while the Italians to '**Urbanistica**'. In some ways, it is a pity that we have had to devise so *many* separate categories for the ways we now try to design our environment and that we have to add "**urban design**" to our vocabulary. This occurs because of a fractionalisation of approach which, too often, has led us to '**role, value and professional conflicts, thoughts and actions**'. Because of these divisions, the **concept of urban design has to be established-** not to create a new or separate field but to present this essential environmental concern from being ignores and lost.

Thomas Jefferson, according to Spreirengen (1965), for example, **saw an image of a future America that was as much a physical as a social vision**", "**his ability**", he continued, "**as architect and town-planner were' not incidental, nor were his visions ethereal. His design ideas were consequent to his social precepts**". At present, in most African countries, we lack a consensus of what our urban building or development of our future will be.

Bearing the above in mind, **urban design** may now be defined as the **architecture of the city design (building)**. In other words architecture is seen as a subset of urban design. Or, as Robert Beckley puts it, "**urban design is the bridge between architecture and urban planning professions**."

Urban design solutions are obviously much larger in scale than architectural solutions, but urban design problems are not

necessarily bigger and more complex than architectural problems.

Furthermore, architecture and its sister art, urban design are often said to consist of **commodities, firmness, delight**. One aspect of commodities in urban development is **sustainability**. Our quest, therefore, to explore the relationship between **architecture** and **urban design** in solving the problems of our African cityscape development must be seen against a backcloth of the current concurs about our urban developmental growth.

As it has been established that **commodities**, which is one of the major elements of the similarities between architecture and urban design, contains **sustainability**; it is now expedient to discuss '**sustainability**' as one of the primary contributors to the African city's ability to sustain its social, economic, and physical structure. In order words, **sustainability**, a relationship between **architecture** and **urban design**, as a **solution** to solving problems of our **built environment development**.

In summary, the discourse demonstrates a shift from a focus on design as 'external appearance and townscape' to the public realm where concern is with public perceptions and experience of buildings within the space (urban design) and the spaces within the building (architecture).

The traditional two dimensional perception of urban planning and the three dimensional perception of architecture has in recent years led to a fourth dimension called "**ecological dimension**" which has now been added to our **built-environmental development (urban design)**; in recognition of concerns about the broad **environmental impact** and **sustainability**. **CEI + S = ED** where; **C is Comprehensive; E is Environmental; I is Impact; S is Sustainability** and **ED is Ecological Dimension**.

1.) THE CODE OR REGULATIONS (THE NATIONAL BUILDING CODE/THE STATE BUILDING REGULATIONS)

The Scope

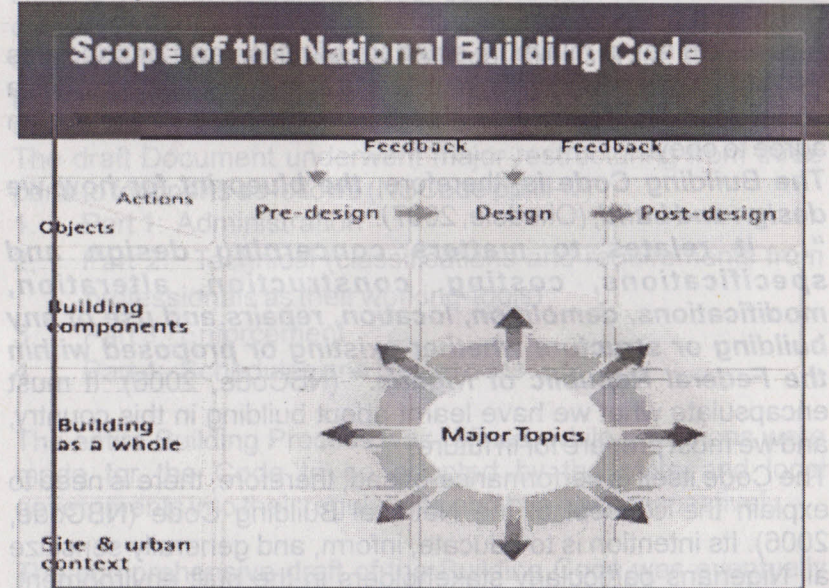


Fig. 13: Scope of the National Building Code

Source: Okedele, 'Niyi: "Understanding the Concept and Overview of the New National Building Code" (Unpublished) NIA BGM November 2007.

THE NATIONAL BUILDING CODE

The Concept

The entire Building Process as redefined earlier from "**design and construction**" to "**pre-design, design, construction and post-construction**". This concept is used throughout the entire Building Code to enable all the seven (7Nos.) primary professionals in the industry to be responsible to the stage(s) each is relevant. This concept will not *only* make the **enforcement process functional** but also makes its **adaptability** to Nigerian situation more **efficient**.

The Building Process is therefore divided into four convenient stages accordingly:

1. Pre-Design,
2. Design,

3. Construction and

4. Post-Construction Stages

Definition

A code is a set of minimum standard of rules, laws or principles that tell people how to behave in terms of conduct or ethics. It is a set of rules that people in a particular business or profession agree to obey.

The Building Code is, therefore, the blueprint for how we design and build, (Okedele, 2007).

“... it relates to matters concerning design and specifications, costing, construction, alteration, modifications, demolition, location, repairs and use of any building or structure whether existing or proposed within the Federal Republic of Nigeria.” (NBCode, 2006). It must encapsulate what we have learnt about building in this country, and we must prepare for in future.

The Code itself is performance-based; therefore, there is need to explain the concept of the National Building Code (NBCode, 2006). Its intention is to educate, inform, and generally sensitize all Nigerians particularly stakeholders in the built environment. We belief it will be of international standard when it comes into full force.

The Evolution of the National Building Code

In 1987, the defunct National Council of Works and Housing directed that a National Building Code be evolved for Nigeria. All the stakeholders in the Building Industry thereafter organized a National Workshop at ASCON, Badagry, Lagos State in 1989. The Draft was fine-tuned at a Workshop held at Gateway Hotel, Ijebu-Ode, Ogun State in 1990. The product of this Workshop was approved by the then National Council on Works and Housing in 1991. Unfortunately, this document was not ratified by the then Federal Executive Council for use in the Country. In November 2005, the 1991 'approved' document was represented to the 2nd National Council on Housing and Urban Development held in Port-Harcourt. The Council directed that the Document be widely circulated to all stakeholders for input to facilitate the production of an acceptable National Building Code.

The National Stakeholders Workshop on inputs and working document on the National Building Code was held at Sheraton Hotel & Towers, Abuja, from 13th June to 16th June, 2006. The outcome of the Workshop formed the basis for the working documents for the plenary session meeting of the seven professional Institutes and their respective regulatory bodies in the Building Industry's Forum.

The draft Document underwent major restructuring from three parts to four parts as follows (NBCode pp.iii-iv)

1. Part 1: Administration
2. Part 2: Technical (classifications and requirements from professionals as their working-tools)
3. Part 3: Enforcement
4. Part 4: Schedules and References

The entire Building Process was refined, while provisions were made for the Code to be adopted by the state and local governments into their regulations and bye-laws respectively.

The comprehensive draft of the Building Code was eventually produced, **approved** at the 3rd Conference of the National Council on Housing and Urban Development held in Kano in November 2006. This National Building Code was later **ratified** by both the National Executive Council, (NEC), and the Council of State as the **“First Edition of the National Building Code”**, (1st.NBCode).

Enforcement of the National Building Code (NB Code)

The importance of ENFORCEMENT within the Nigerian context cannot be over emphasized. **“An established law that is not effectively enforced is worse than not having it”** (Okedele, 2006).

“We shape our built environment, and our built environment shapes us” (Winston Churchill). We are affected by our built environment, particularly when they are exciting or inspiring, and also when they do not provide the comfort, accommodation or economy that we expect. (Okedele, 2005).

To effectively enforce the NB code, a formal enforcement process is hereby presented:

1. Awareness
2. Adherence or compliance
3. Sanction and prosecution

Some basic questions that may be used to design 'radio / press / television programmes e.t.c. are:

PLANNING PERMISSION

- 1) Planning controls
- 2) Who requires planning permission?
- 3) Who controls planning permission?
- 4) What is planning permission?
- 5) What types of planning permission are available?
- 6) How do I apply for planning permission?
- 7) Do I really need planning permission?
- 8) How should I set about gaining planning permission?
- 9) What sort of plans will I have to submit?
- 10) What is meant by 'building works'?
- 11) What important areas should I take into consideration?
- 12) What are the government's restrictions on planning application?
- 13) How do I apply for planning permission?
- 14) What is the planning permission process?
- 15) Can I appeal if my application is refused?
- 16) Before you start work
- 17) What could happen if you don't bother to obtain planning permission?
- 18) How much does it cost?

THE BUILDING CONTROL LAW

- 1) Aim of the Building Control Law
- 2) What happens if I contravene any of these requirements?
- 3) Who polices the Building Control Law?
- 4) Are there any exemptions from Building Regulations?
- 5) What about civil liability?
- 6) What does the Building Control Law contain?
- 7) What are the Supplementary Regulations?
- 8) What are 'Approved Documents'?

- 9) What is the 'Building Regulations Advisory Committee'?
- 10) What is 'type approval'?
- 11) Does the Fire Authority have any say in Building Regulations?
- 12) How are buildings classified?
- 13) What are the duties of the local authority?
- 14) What are the powers of the local authority?
- 15) Who are approved inspectors?
- 16) What causes some plans for building work to be rejected?
- 17) Can I apply for a relaxation in certain circumstances?
- 18) Can I change a plan of work once it has been approved?
- 19) Must I complete the approved work in a certain time?
- 20) How is my building work evaluated for conformance with the Building Regulations?
- 21) What about dangerous buildings?
- 22) What about defective buildings?
- 23) What are the rights of the owner or occupier of the premises?
- 24) Can I appeal against a local authority's ruling?

THE BUILDING REGULATIONS

- 1) What is the purpose of the Building Regulations?
- 2) Why do we need the Building Regulations?
- 3) What building work is covered by the Building Regulations?
- 4) What are the requirements associated with the Building Regulations?
- 5) What are the Approved Documents?
- 6) Are there any exemptions?
- 7) What happens if I do not comply with an Approved Document?
- 8) Do I need Building Regulations approval?
- 9) How do I obtain Building Regulations approval?
- 10) What are building control bodies?
- 11) How do I apply for building control?
- 12) Full plans application
- 13) Building notice procedure
- 14) How long is a building notice valid?
- 15) What can I do if my plans are rejected?

- 16) What happens if I wish to seek a determination but the work in question has started?
- 17) When can I start work?
- 18) Planning officers;
- 19) Building inspectors;
- 20) Notice of commencement and completion of certain stages of work;
- 21) What are the requirements relating to building work?
- 22) Do I need to employ a professional builder?
- 23) Unauthorized building work;
- 24) Why do I need a completion certificate?
- 25) How do I get a completion certificate when the work is finished?

The expectation is that the relevant prime professionals involved in each of the four stages of a building's whole life should be responsible for the execution of the stage's enforcement process. As aforementioned, the enforcement of the NBCode is made to relate to measurable deliverables for each of the four distinct stages of the building process. The issues involved are treated under the following two sub-headings:

1. **Requirements/Standards/Specifications,**
2. **Enforcements.**

This approach does not only make the enforcement of the NB code functional, but its adaptability to the Nigerian situation more efficient. A violation occurs when an act that is performed, caused or permitted by any person, firm or corporation is in conflict with, or not in compliance with any of the provisions of the NB code (Okedele, p.9).

Administration of the National Building Code (NBCode)

Section 3 of the NB Code refers to various statutory committees, their modes of formation, criteria for selection of members, and the different aspects of the enforcement process which each committee is expected to focus on. Examples of such committees are:

(a) **THE BUILDING CODE ADVISORY COMMITTEE (BCAC):** At the national/federal level, the **Building Code Advisory Committee (BCAC)** are appointed by the Minister of Environment, Housing and Urban Development with responsibility to review, amend, improve and produce a new building code and associated documentation (NB Code, p.23).

(b) **THE BUILDING REGULATION (CONTROL) AUTHORITY:** Similarly, at state or local levels, the **Building Regulations/Control Authority** is established by the relevant Ministry, and the **BUILDING REGULATION (CONTROL) BOARD** with membership drawn from duly registered practitioners in all the seven professions in the Building Industry and other stakeholders like Standard Organisation of Nigeria, Fire Officers, Public Health and Safety Officers. (NBC p.429).

(c) **THE TECHNICAL SUB-COMMITTEES:** The enforcement process prescribed here can be achieved through the four stages earlier mentioned through **four technical sub-committees of the BCAC**. The technical sub-committees shall consist of the following:

1. **Pre-Design: Developmental Planning, Environmental, Health, Safety, Quality and Proficiency Sub-Committee.;**
2. **Design: Architectural and Engineering Designs, and Specifications Sub-Committee;**
3. **Construction; Materials, Methods and Construction Sub-Committee;**
4. **Post-Construction; Occupancy and Maintenance Sub-Committee.**

The National Building Code stipulates channels through which every committee listed above executes its compositions, duties and responsibilities. (NB Code pp.24, 429).

(d) BOARD OF PETITION

The National Building Code also provides for the establishment of a **Board of Petition** for **sanctioned violators** who believe that

they were unjustly sanctioned. Again, the National Building Code stipulates channels through which the Board of Petition executes its compositions, duties and responsibilities. (NB Code p.432).

The enforcement process at the construction stage includes serving a notice of violation or order in writing to anyone who violates any of the provisions of the NBCode. Such order shall direct the discontinuance of the unlawful act and the abatement of the violation. If the notice of violation is not complied with within the stipulated period, the Code Enforcement Division/Section/Unit shall request the legal counsel of the jurisdiction to institute the appropriate proceeding at law or in equity to correct such violation. The violator has the right to appeal to the **Board of petition** if he or she believes that he or she has not violated the Building Code.

In summary, sir, the portion of this presentation has discussed the genesis of the general concept behind the National Building Code which led to its first edition in 2006. It is the first generally agreed working document to be used to help arrest the growing decadence in the built environment.

The four Parts (Parts I-IV) and the fifteen (15 No.) Sections of the National Building Code were highlighted, touching on the various relevant professionals, unambiguously assigning their relevant roles and responsibilities.

The factors affecting the enforcement of the laws generally are highlighted and the recommendations on ways to comply through the established and functional (1.) **Building Code Advisory Committee (BCAC)**, at the national or federal level and at state level the **Building Control Authority Board (BCAB)**; (2.) the **Technical Sub-Committees** and (3.) the **Board of Petition** for appeal cases are suggested.

This presentation will now re-emphasise the important impact the National Building Code will have in the transformation process of our built environment if all the key players comply with the Code and Regulations.

ACTION FOR OBIATING DECADENCE IN THE BUILDING INDUSTRY

Majority of the shortcomings noticeable in the building industry today are traceable to unlawful acts by the stakeholders. The National Building Code refers to unlawful acts thus: "It shall be unlawful for any person, firm or corporation to erect, construct, alter, extend, repair, remove, demolish, use or occupy any building or structure violating the provisions of this code" (p. 431).

Buildings, like all structures, are designed to support certain loads without deforming excessively. The loads are the weights of people and objects, the weight of rain and the pressure of wind-called live loads-and the dead load of the building itself. With buildings of a few floors, strength generally accompanies sufficient rigidity, and the design is mainly that of a roof that will keep the weather out while spanning large open spaces. With tall buildings of many floors, the roof is a minor matter, and the support of the weight of the building itself is the main consideration. Like long bridges, tall buildings are subject to catastrophic collapse.

The causes of building collapse can be classified under general headings to facilitate analysis. These headings are:

- *Bad Design*
- *Faulty Construction*
- *Foundation Failure*
- *Extraordinary Loads*
- *Unexpected Failure Modes*
- *Combination of Causes*
- *Substandard/poor quality materials*
- *Natural Disasters*

Source: Lagos State Physical Planning and Control (LASPPA), 2008.

In addition, Iyagba (2005), Adenuga (1999) and Oloyede (1991) identified causes as follows:

- **Site Development Error**
- **Operational Errors**
- **Inadequate Maintenance.**

Defects, structural failures and collapse of buildings are not limited common phenomena to Nigeria alone. For instance, in 1968, a 23-storey Ronan Point Tower in Newham, East London suffered a fatal partial collapse due to a natural gas explosion. In 1973, a 24-storey building collapsed Alexandria, Virginia, U.S. In 2003, an overloaded balcony collapsed during construction of an apartment building, killing 13 people and seriously injuring 57 others in Chicago. The Sampoong Department Store in Seoul, South Korea collapsed due to structural failure in June, 1995 in which 501 people died and 937 sustained injuries!

Thus, it is evident that actions or inactions of professionals and other stakeholders during any stage of the building process or in the life cycle of a building, can manifest into failure or collapse. The National Building Code recognizes the complementary roles of building industry professionals and gives guidelines on expected minimum performance at every stage in the building delivery process.

STATISTICS OF COLLAPSE BUILDINGS IN LAGOS STATE OVER YEARS

Table 2: List of Collapsed Buildings from 2005 Till Date

| S/N | LOCATION OF BUILDINGS | HEIGHT | DATE OF INCIDENCE | REMARKS |
|-----|---|-----------------------|-------------------------------|---------|
| 1 | 40, Market St Somolu | 2 Storey Building | 29 th March 2005 | |
| 2 | Along Kodesoh/B. Anthony way Ikeja | 2 Storey Building | 4 th April 2005 | |
| 3 | Along Adeniyi Adele | 3 Storey Building U/C | 17 th July 2005 | |
| 4 | 6, Princes St Lagos | 3 Storey Building | Ditto- | |
| 5 | Iponri, Lagos | 2 Storey Building U/C | 8 th Sept 2005 | |
| 6 | Mende Maryland | 2 Storey Building | -ditto | |
| 7 | Along Adeniyi Jones, Ikeja | Wall Fence | 2005 | |
| 8 | 32, Okesuna St., Lagos-Island | 4 Storey Building | 2005 | |
| 9 | 53, Cemetery Rd. Amukoko | 4 Storey Building | 20 th Jan. 2006 | |
| 10 | Ijora, Ajegunle | 3 Storey Building | 21 st Jan., 2006 | |
| 11 | NIDB Building, Broad St. Lagos - Island | 20 Storey Building | 22 nd Mar 2006 | |
| 12 | 71, Ibadan St. Ebute -Metta West | 3 Storey + P H | 18 th July 2006 | |
| 13 | 42, Ibadan St. Ebute-Metta East | 3 Storey | 6 th Oct. 2006 | |
| 14 | 1 Murtala Muhammed Int. Airport, Oshodi | 2 Storey | 27 th Nov. 2006 | |
| 15 | 6A, Milverton Close, Ikoyi | 1 Storey | 2006 | |
| 16 | 5, Glover St. Ebute -Metta, Lagos. | 3 Storey | 20 th May 2007 | |
| 17 | 118, Ojuelegba Rd. Surulere | 2 Storey | 4 th May, 2007 | |
| 18 | LASU-Iba Rd. Opp Rosellas | 2 Storey | 16 th May, 2007 | |
| 19 | 45/47 Martins St. Lagos Island | 7 Storey/Mixed Devt. | 20 th Sept. 2007 | |
| 20 | 48, Adams St. Lagos | 3 Storey | May, 2007 | |
| 21 | 38, Idumagbo Ave. Lagos Island | 3 Storey/Mixed Devt. | May, 2007 | |
| 22 | 35B, Seriki St. Lagos Island | 4 Storey/Mixed Devt. | 2007 | |
| 23 | 33, Edgerton St. Lagos Island | 4 Storey/Mixed Devt. | 16 th June, 2007 | |
| 24 | 71, Agoro St. Lagos | 3 Storey | 18 th June, 2007 | |
| 25 | 17, Idushagbe St. Lagos Island | 4 Storey | 13 th August, 2007 | |
| 26 | 8, Ashaka St. Abule Nla, Ebute - Metta | 2 Storey | 20 th June, 2007 | |
| 27 | 15/17, Nnamdi-Azikwe St. Lagos Island | 3 Storey/Comm. Devt. | October, 2007 | |
| 28 | 3, Liadi St. Lagos Island | 4 Storey + P H | 2007 | |
| 29 | Tejuosho Market, Yaba | Market | 18 th Dec., 2007 | |
| 30 | 77, Aroloya St. Lagos Island | 4 Storey/Mixed Devt. | 24 th Dec., 2007 | |
| 31 | Tawaliu Bello St., Lagos Island | 5-7 Storey Building | 6 th Feb. 2008 | |
| 32 | 8, Okepopo St., Lagos Island | 3 Storey | 13 th Feb., 2008 | |
| 33 | 19, Ijaotun st. off Aminu st. Alapere, Ketu | 2-floors +basement | 19 th April, 2008. | |
| 34 | 69, Ogudu Rd., Ogudu-Ojota | 3-floors U/C | 19 th April, 2008 | |

Source: Lagos State Physical Planning Control (LASPPA), 2008

From the above table, investigations revealed that most of the buildings collapsed during:

- construction;
- a period when the legal and administrative frameworks for development control were weak;
- the Development Control Department (responsible for monitoring and enforcement of Planning law and regulations) was merely a Department in the Ministry of Physical Planning and the Environment during this period;
- there were only few and untrained Enforcement officers called Planning Officers mandated to carry out the development control activities despite the fact that it was a boom period when construction activities were at the peak;
- there was no Regulatory Agency for material testing during this period.

Though the State started implementing the new Urban and Regional Planning Law (1998) and established the erstwhile Lagos State Urban and Regional Planning Board now LASPPDA, most of the reported collapses were as a result of poor workmanship, sub-standard materials and bad designs. The enforcement of Planning Law and Regulations was not enough to curb structural defects which led to many of the collapses. The State Government subsequently reviewed the 1986 Town & Country Planning (Buildings) Regulations and established State Material Testing Laboratory Agency to control building development. Currently, the Lagos State Government has set up a Technical Committee on Policy Reform on Development Regulation and Building Control. A technical workshop was organised and seven key papers on the theme were presented; fifty-nine resolutions came out of the syndicates formed after the workshop. Invitation for memoranda was requested from all stakeholders; multidisciplinary team of professionals was appointed to form the editorial team which is currently being coordinated by me.

USE OF THE COMPLIANCE FORM

The **Building Code** or **Building Control Advisory Board** should ensure compliance of the provisions on site during construction as outlined in the compliance forms, and specifically, the use of qualified professionals in project execution. The forms should be produced and signed with the number of items covered which shall be taken as specified by relevant designer in his design details and specifications. Furthermore, signing of various stages of construction process may be used as part requirements for stage valuation payment to the constructor, depending on the scale and complexity of projects.

The following compliance forms are to be produced, in required copies, by the Project Architect and applied at the various stages of construction activities with other relevant professionals and consultants; the stage compliance forms may be increased, depending on the complexity and scale of the project:

| S/N | DESCRIPTION | REF. NO. |
|-----|---|------------|
| | SETTING OUT FORM | FORM BC/01 |
| | FOUNDATION/BASEMENT COMPLIANCE FORM | FORM BC/02 |
| | ROOFING AND CLOSING COMPLIANCE FORM | FORM BC/03 |
| | SUPERSTRUCTURE COMPLIANCE FORM | FORM BC/04 |
| | MECHANICAL INSTALLATION COMPLIANCE FORM | FORM BC/05 |
| | ELECTRICAL INSTALLATION COMPLIANCE FORM | FORM BC/06 |
| | FINISHES COMPLIANCE FORM | FORM BC/07 |
| | STOP WORK /REMOVAL/DISCONTINUATION NOTICE | FORM BC/08 |

SOURCE: *The National Building Code (NB Code), 1st Edition, 2006, pp.459-481*

RECOMMENDATIONS:

Mr. Vice-Chancellor, Sir, as essentials in the solution to the development of a sustainable built environment, I hereby submit, as my recommendations, the following:

1. The traditional two-dimensional perception of urban planning and the three-dimensional perception of architecture has in recent years led to a fourth dimension called "**ecological dimension**" which has now been added to our **built-environmental development (urban design)**; in recognition of concerns about the broad **environmental impact** and **sustainability**. **CEI + S = ED** where; **C is Comprehensive; E is Environmental; I is Impact; S is Sustainability** and **ED is Ecological Dimension**;
2. **Use of Social Research Experts as Background Empirical Data Bank:** It was made clear that **social research** (use of social workers) is a necessary background and also to constitute a permanent **institution**, so as to enrich the city's continuous **planning development**. The **cultural aspect** of the **social problem** is particularly stressed.
3. **Consideration of the Comprehensive National, Regional, Master, District, Local and Action Plans are mandatory for Planning Improvement and Development as Appropriate Means and Methods.**
4. **Fundamental Principles of Urban-Design:** Three fundamental principles of urban-building or city-design that guarantee satisfactory solutions and lasting results are discussed, these are:
 - **principles of expression,**
 - **correlation,** and
 - **organic order,** of which the last is the **all-governing mother principle** which is the **fundamental principle of architecture in all creation.**
5. **Consideration of the Architectural Nature of the City-Design:** The architectural nature of the city-building (i.e.

urban design) is emphasized, particularly when one considers the training of architecture that adequately satisfy the city's requirement as a *product of human art* which can be **physically, spiritually, and culturally healthy.**

6. **Geographic Information System/Land Information System, (GIS/LIS):** In light of rapid population growth and urbanisation in Nigerian cities as highlighted earlier in this paper, it is important that an appropriate information system for effective urban management be put in place. Urban management will mobilize diverse resources to work in a co-operative manner in the field of planning, programming, budgeting, development, operations and maintenance of settlements in order to achieve the development objective of the city. For GIS/LIS to be effectively utilized in planning in Nigeria at national and state levels, a model must first be developed at the local government level, which is the grassroots level of all political, planning, and administrative process of government. With a GIS/LIS in place, dynamic tools and strategies would be used to resolve complexities of land use that have outpaced land use planning. Urban Planners and managers would have an aid to make day-to-day decisions. This decision affects the lives of communities and current data about land use is a crucial input.

7 Evaluation and Planning: Urban Management involves mobilizing of natural, human, and capital resources in an integrated manner and planning for both present and future demand for infrastructure and services. Vital thematic information includes land use, transportation, housing, public utilities, social services, and census data. These data assist the planner and policy makers to assess, forecast, and plan for urban areas. Presently, information is in the possession of various government

departments who utilize them independent of other departments. This fragmented approach needs to be replaced with an integrated information system in which all information are on one database that would be easily retrieved by any department to enhance decision-making.

8. **Financing Urban Management:** Urban Management programmes which are mostly implemented at the local level are capital intensive, it is hereby suggested that both the Federal, State Governments should finance all **settlement Cadastres i.e. community property registers which identify the owner of each property and his payment status. Cadastre offices need to be located in every Local Planning Authority.** This will form another definite source of revenue in the payment of assessment and any other planning fees to the local planning authorities.

More urgently, sir, immediate actions should be taken to ensure **effective enforcement process** of the **National Building Code** which includes:

9. *Proper Education and enlightenment programmes of the public through print and electronic media translated into local major languages to create awareness.*
10. *All the relevant professionals should be more proactive in observing compliance.*
11. *Violators should be sanctioned and prosecuted to serve as deterrence to possible future violations.*
12. *The Board of Petitions should be effective and empowered to boost public confidence.*
13. *Code Enforcement Officers should be trained specially for greater efficiency.*
14. *Only registered professionals should be Code Enforcement Officers in their relative professions.*
15. *Quacks and factions in various professional Institutes*

should be recognized and encouraged to merge with their main professional Institutes after adequate training;

16. *Obsolete Decrees should be reviewed.*

17. *Transparent spot checks by senior government officials should be done to reveal corrupt government workers who engage in tribalism and those who facilitate bureaucratic bottlenecks.*

CONCLUSIONS

A number of conclusions can be drawn from the course of this presentation that pertains to the concept of Sustainable Built Environment in Nigeria.

First and foremost is our argument that has touched the separation of the **Building Control** from the **Planning Regulation** to form the **Building Control Authority (BCA)** and the **Planning Regulation Authority (PRA)** all in the **Ministry of Built Environment (Ministry of Physical Planning and Urban Development, in the case of Lagos State)**. This is in line with the provisions as contained in the National Building Code.

Secondly, the weak strings of **Physical Planning**; their superficial efforts that have failed to bring necessary order into the city. We hereby advocate for the **architectural** understanding of our **built-environment**, which calls for the creative mind **urban design process**.

Thirdly, the quest towards **Sustainable Development** in our urban areas puts the spotlight on the **built-environment** especially the **Pre-Design, Design Construction and Post Construction Stages** of our **Building Process**.

Fourthly, a collective effort must be made, by all professionals in the built-environment to work hand-in-hand to solving the problems in our built-environment in the areas of **Sustainable Development**, and work together to prevent such '**unimageable**' occurrences in the '**would-be**' (undeveloped or

vacant) areas, using the appropriate **concept of Sustainable Development**.

Finally, "Make no little plans, they have no magic to stir men's blood; make big plans, for a noble document once recorded will never die" (Daniel H. Burham, the Chief Architect Planner of Chicago 1893).

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APPENDIX A- TERMINOLOGIES

City: a place of relatively dense settlement, dense enough so that city's residence cannot grow their own food.

Urban: Countries differ in the way they classify population to define "**urban**" or "**rural**". Generally, a community or settlement of 2,000 or more is considered urban.

Urban agglomeration: urban areas of 1 million populations or more with contiguous territory inhabitants.

Urbanisation: a process by which an increasing proportion of an entire population lives in cities and suburbs of cities.

Less developed countries: all countries in Africa, Asia (excluding Japan) and Latin America including the Caribbean, Melanesia, Micronesia and Polynesia regions.

More developed countries: countries in Europe, North America, Australia, New Zealand, and Japan.

Mega cities: city with a population of 10 million or more residents.

Metropolitan area: a large concentration of population, usually an area with 100,000 or more people.

Urbanisation in Africa: the process in which an increasing proportion of the entire population lives in built-environment in Africa.

Space: Spontaneous perception presents space as a container existing prior to, and independently of, the physical bodies that find their place within it. In such a view, the spaces between things are empty.

Element: denotes a characteristic unit which is a part of an architectural or urban design '**form**'. The term has a double meaning as it denotes both an independent whole (Gestalt view) and a part belonging to a more extensive context.

Urban Space Setting: Movements of elements in a city, and in particular, the people and their activities, are as important as the stationery physical parts. -**Kevin Lynch, (1979)**.

Form: is a three-dimensional object consisting of lines and planes.

Perception: is the response to combine effects of the properties of the physical events encountered, conditioned by culture, past

experiences and personal interests or inclinations.

Conception: is the comprehension of the ordered or disordered relationship among physical elements and systems, and responses to the meaning they evoke.

Brundtland Reports definition of Sustainable Development: is a development which meets the needs of the present generation without compromising the ability of future generations to meet their own needs. It contains within it, two key concepts: the concept of needs, in particular, the needs of the world's poor, to which overriding priority should be given: and the idea of limitation imposed by the state of technology and social organization in the environment's ability to meet present and future needs" (*Brundtland Reports, 1987 p.43*).