



Science

## **ARCHITECTURAL DESIGN HARMONISING WITH THE SURROUNDING FEATURES**



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### **Abstract**

Since the creation of man, there has been continuous transformation of the environment for convenience, at an almost unlimited pace. This process has become faster in the last 50 years, especially in areas of civilization and city planning. The implication is that when man creates, there is usually a destruction of the natural, forgetting that man and the rest of nature need to co-exist in harmony with each other. Architectural Design on the other hand, attempts to make good all human tendencies and activities meant to destroy the age long relationship that existed between nature and man. The paper attempts to look into natural surroundings of man, and finally proffer suggestions on how nature and man will be close as in the good old times of early man. The paper therefore, aims at highlighting how architectural design can reduce the gap between Nature and transformation activities, hence creating a harmony.

**Keywords:** Architectural Design; Design; Harmony; Nature; Surrounding.

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### **1. Introduction**

Architecture is neither a recrimination of cultural evolution nor a dark criticism of the errors that have been committed since criticism of the errors that have been committed, since architecture and city planning moved against nature. Nature itself is beautiful in it is an infinite variety of shapes, colours and species living together in a perfect, logical unquestionable way. The only imperative for living with nature in mutual respect.

Early in man’s existence, there is closeness to natures’ relationship. The intimate and understanding relationship led to harmonious or at least balanced interaction. Time passed and humans grew both in number and knowledge. Consequently, attitudes changed to the surroundings, learning to protect from inclement weather and enemies. Proud, blinded by feelings of superiority and power, humans unwittingly became nature’s enemy. As human moved further away from the traditional origins there was an evolution of living spaces foreign to the

earlier existence. Despite this unfortunate trend in man, there is a still feeling and yearning for the deserted nature and even visit it recreationally! Humans go to parks, forests, mountains, lakes and find this ancestral environment beautiful and authentic, while perceiving his own surroundings to be bankrupt and false.

Evolution gradually proceeds through small genetically accepted changes. Natural wisdom is light years ahead of us in experience, systems and structures; three billion years of experience as compared to technology, still in infancy, makes this inevitable. Even the humblest of nature's designs would offer us conditions more suitable to human satisfaction. Ancient art was inspired by natural designs, although this tendency has gradually and little by little been lost. Minimal effort exists to re-direct human views of nature aiming to re-establish the equilibrium lost through rapid technological development. The ideal should be, in the near future, to reintegrate science, technology, and humanism, restoring a balanced relationship with nature and reducing the strains on natural resources. (Senosiain 2003).

Architectural Design on the other hand has been traditionally referred to as a problem-solving process. There are two major approaches to Architectural design.

- (i) The “black box” and (ii) the “glass box” approaches.

The black box approach views designs as an abstract process that occurs in the mind of the designer, in which case the design process cannot be analyzed; it is an intuitive process. It is a mystery locked in the creative ability of the designer. The “glass box” process on the other hand, sees design as a logical process and decision sequence. This process forms the background of the traditional Architectural Design Process comprising analysis, synthesis and evaluation (Broadbent 1973; Jones 1981). Analysis is the problem formulation stage in which the designer obtains the requirement of the client and develops it into a problem requiring solution. Jones (1981, P63) describes analysis as “breaking the problem into pieces”. Similarly, the synthesis stage is described as “pulling the pieces together” concentrates on the work of the Architect and other Professionals as they team up to produce alternative solutions to the formulated problem. The evaluation stage further emphasizes choice of the most likely solution from the alternatives produced after testing the fit or congruence of the chosen alternative and the client's desire. Evaluation is summarized by Jones (1981-P63) as “testing to discover the consequences of putting the new arrangement into practice”. This three- stage design process forms the basis of other modifications like the five-stage design process of Royal institute of British Architects (RIBA) – Initiation, preparation, proposal making, Evaluation and Action. The attributes of the design process are:

- 1) It is a step by step process- Sequential in nature in a logical manner.
- 2) It is a trial and error procedure; Relies on intuition steaming from knowledge and experience.
- 3) Less consumer sensitive and more producers oriented.
- 4) It starts from briefing and is assumed to terminate at preoccupation.

It is pertinent to stress here that; the design process should de-emphasize producer oriented result and emphasize consumer sensitive. This will go a long way to involve the final user in the design process at each stage.

The objectives of the study include:

- 1) To determine how designing could affect surrounding features
- 2) To harmonize Architectural design with surrounding features as a means of improving comfort and reducing cost.
- 3) To determine how Architectural design can reduce the gap between nature and human activities to create harmony.

## **2. Methodology**

The study adopted the secondary source of data collection by exploring previous works on the subject matter using internet, journals and books.

## **3. The Concept of Design**

There are diverse definitions and views expressed on a design as there are many professions involved in design. Alexander (1977) gave a universal definition of design as initiating change in man-made things. Booker (1966) defines design as simulating what we want to make before we make it as many times as may be necessary to feel confident in the final result. On the other hand, Asimow (1962) defined design as a decision making in the face of uncertainty, with high penalties for error. Heery (1975 pg 84) looks at design as that which “determines the degree of almost the long term benefits of building programme”, whose success is the result of ‘creative minds, solving the given problems of function and environment: It is also an adaptive mechanism whereby members of human race are able to cope with the surroundings and with difficulties of change. (Brandon and Powel, 1984)

Steven (2004) stressed different areas of design, which according to him include-graphic, architectural and Engineering designs among others. Carmona (1996) presented a more compressive definition that captures design in totality, social, functional and sustainability. In a similar way, the Department of Environment (DOE) (1999) looked at Urban design in Britain as a relationship between buildings and streets, squares, parks and other open spaces, which make up the public domain. It is also the relationship between one part of a village, town, city with other parts and the interplay between our evolving environment, values, expectations and resources of people. While emphasis is put on the general arrangement of building masses and amenities in three dimensions, the definition provides a more detailed view as it relates design, human activities with the resources of the people.

The term design today has become a generic name for varying trades. It therefore rightly or wrongly finds expression in fashion design in garment workshops, component design in production factories, furniture design in furniture construction companies, architectural design in building constructions firms and so on. It is noteworthy that it is being commonly associated with human endeavors that require novelty in their operational practices.

From the foregoing, from whatever facet you look at design it connotes learning, it also needs the contributions of other specialist to achieve a more positive result. This presupposes that modern designers rarely work alone; they often liaise with other specialists from different fields. Practically, the distinction between designers, craftsmen, engineers, architects, artists, town

planners, businessmen, scientists, marketing consultants and technician are blurred (Steven 2004).

### **3.1. The Concept of Architectural Design**

Primarily Architecture is to provide a habitable environment and enhance the quality of physical landscape to serve mankind. Architecture is a profession; involving a high degree of specialized training which proficiently entitles one to an occupation that provides earning. Architecture is an art; it responds to the emerging problems in the context by providing new solutions through design, construction and technology in the building industry. As a science, Architecture's products are subjected to the theories of natural laws and consistently receiving inputs from related research findings. Architectural design was a fundamental duty to articulately and rationally arrange what is within and reconcile it with what is without to create order in the flow of space and satisfy the aesthetic requirements in human settlement. It is constantly affected by outside pressures such as standards, fashion, finance, technology, and materials, brief and most importantly the condition of the environment. Architectural design is therefore a problem solving process. Experience indicates that problems do not always have exactly the same parameters of dimensions; hence the solution to Architectural problems cannot be the same. Solutions are normally specific to the clients, site conditions and the approach of the designer. It is very important at this stage to emphasize that Architects must thoroughly understand the site conditions, to offer appropriate solutions to peculiar challenges. There is need to sensitize architects on the need to proffer architectural design solutions that will not be wholly destructive on nature. The solution reached should encourage the existence of nature side by side with the final solution.

### **3.2. How Architectural Design Solution Can Reduce the Gap Between Nature and Man**

- Thermal comfort- Proper orientation can increase the energy efficiency of a building, making it more comfortable to live in and cheaper to run. (McGeen., Reardon, and Clarke,2013) The building configuration must be capable of maintaining an acceptable range of comfort level at minimal or no extra cost to the users. This can be achieved with minimal surface along sun path and longer walls to cooling breezes. As stated by Edwards (1999), building design is appropriate when minimum energy input and the lowest level of technology achieve effective, efficient and healthy conditions. According to Szokolay (1992) provision of adequate air movement is a very viable passive control method in tropical warm-humid climate. In line with this air movement within a space should be examined to determine how to make the space comfortable.
- Environmental issues (EI) approaches. Design, construction and operation must implement Design For Environment (DFE) approaches. This include the promotion of healthy functioning of the ecosystem through energy efficiency, efficient use and re-use of materials and components, toxicity, durability and so on.
- Environment-behaviour studies (EBS). According to Moore (1974), is the systematic examination of “relationships between the environment and human behavior and their application to the design process”. EBS is a multi-disciplinary field involving psychologists, sociologists, anthropologists, architects, urban planners, geographers and other related disciplines, all of which apply different methodologies with the main

objectives of improving the quality of the environment to satisfy man. Man is happier and contented when he is close to nature.

- Creation of well landscaped Recreational parks; this scene of a park will give man a close to nature's look. Though, artificial but is vital for relaxation and an emblem of nature close to man. Fresh air, good vegetation and at times quietness are the major attributes of a recreational park. All towns, especially the congested ones must have this facility to reduce stress, which is a killer and get refreshed.
- Creation of Zoos and Forest reserves- This will enhance the age long relationship existing between animals and man and also between man and the plants (forest), the destruction of medicinal trees and grasses is akin to extinction in the long run, which is adverse to health.
- Harmonizing Buildings with Physical Surroundings- Naturally, the surroundings and the architectural design are to be co-existing in mutual respect. Frank Lloyd Wright's Kaufman "Falling water" House derived its popularity amongst artist of modern architecture essentially from its deep sculptural planar cantilevers which appeared to amplify the sharp gradient of the waterfall above which they overhang (see Fig. 1). Other examples in Ado-Ekiti, Ekiti State, Nigeria are figs, 2 and 3. Another example is the Burj Al Arab hotel Dubai (fig 4), which has a concept of a Yacht, harmonizing with the surrounding water.
- Designers must be educated through Environmental awareness- Many practicing Architects today have no good knowledge to implement the principles of sustainability and to investigate alternative solutions. All must be aware/educated to keep their clients well informed. The information will help to take into considerations the incorporation of energy efficiency, conservation measures and renewable energy technologies of solar, wind, water and biotechnological Principles,
- Architects' design should be more sensitive on issues such as energy consumption, use of environmentally sustainable materials and design concepts that will reduce environmental impact. As Maggie Toy (Farmer, 1996) observed, designers' response to these new demands fall into two distinct approaches.
  - a) The use of environmentally degradable construction materials such as earth, thatch and turf, and the application of traditional and Vernacular methods which are in consonance with these materials or the use of organic forms and buildings with organic appearance that stimulate natural forms or:
  - b) High technology response such as the use of modern technology and materials that protect and conserve energy, recycling of waste materials in building, the design and production of intelligent buildings that respond appropriately to environmental factors and forces.
- Cooperative efforts- There must be absolute consultation and cooperation rather than competition and confrontations among the key players in the development process- all relevant professional, non-governmental organizations and governments at all levels.
- Bionics- This involved the creation of function and forms analogous to those of the living organism. This is achieved by means of observation and thorough research, analysis and synthesis. This science does not attempt to trace or copy; it works on the basis that every model can potentially provide ideas for design of new methods of building that will improve the existing once, hence improving the mutuality between man and his surroundings. See table 1 below.



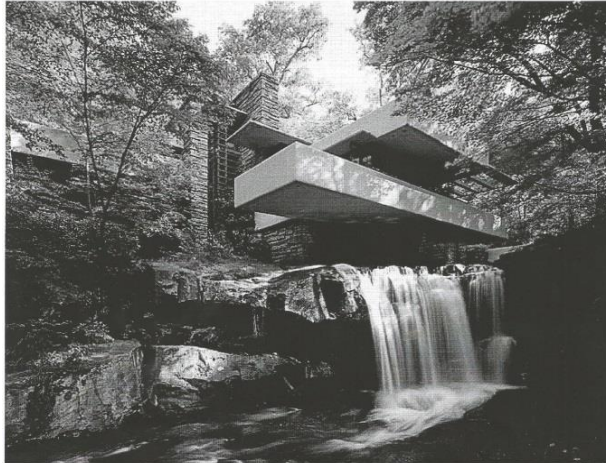


Figure 1: FrankLloyd Wright’s Kaufman Falling water

Source: Adapted from <https://www.google.com/search?q=frank+lloyd+wright&>



Figure 2: Otunba Reuben Famuyibo House Along Ilawe Road, Ado-Ekiti

Source: Authors’ field work 2017



Figure 3: Guarantee Trust Bank (GTB) Along State Secretariat Road, Ado-Ekiti

Source: Authors’ field work 2017



Figure 4: Burj Al Arab Jumeirah Hotel Dubai

Source: Adapted from <https://www.google.com/maps/uv?hl=>

Table 1: Applications of Bionics

Nature design	Architectural design
Fish Scales	Tiles, Shingles
Oyster	Hinge
Root	Foundation
Eggshell	Dome
Anthill	City
Tree, Trunk, arm	Columns

Source: Senosiain 2003

- Avoidance of careless destruction of vegetation. Care must be taken during construction not to destroy the vegetation. This weakens slopes, increase flood and erosion hazards. It also results to the gradual reduction of the biological diversity in plants and animals with adverse consequences of increasing the gap between man and nature.

#### 4. Conclusion and Recommendations

Thermal comfort, efficient functioning of Ecosystem, quality of Environment, creations of zoos and parks, harmonizing building with physical surroundings, community awareness, reduction of environmentally polluting substances in Architectural design are major means of achieving a balance between man and the surrounding features. Generally, architectural design is a problem solving and societal service oriented discipline which moves with time and so it is subject to changes. These changes should not in any way increase the gap between man and nature; instead the changes should narrow the gap, for the two to co-exist in harmony. The collaborative efforts of all players involved should be to emphasis cooperation and consultation and not confrontation and competition.

#### References

- [1] Alexander, C. (1977). *A Pattern Language*, New York, NY: Oxford University Press.
- [2] Asimow, M. (1962). *Introduction to Design* New York, NY. Prentice Hall.
- [3] Booker, L. (1996). *Conference on teaching of Engineering Design*. London
- [4] Brandon, P.S. and Powel, J.A (1984). *Quality and Profit in Building Design*, London, E & F.N. Spon.
- [5] Broadbent, G. (1973): *Design in Architecture*, John Willy & Sons LTD.
- [6] Carmona, M. (1996): *Controlling Urban Design- Part 1: A possible Renaissance?* In *Journal of Urban Design* Vol. 1.
- [7] Department of Environment (1999): *Quality in Town and Country Campaign*, London.
- [8] Edward, B. (1999): *sustainable Architecture-European directives and building design*. Architectural Press, Oxford, U.K
- [9] Google (2015): *Modern Architecture* (accessed Sept 3, 2015)
- [10] Farmer J. (1996): *Green Shift: Toward a Green sensibility in Architecture*, Architectural Press, Oxford.
- [11] Heery, G.T. (1975). *Time, cost and Architecture*, New York, McGraw-Hill Book Company.
- [12] Jones, J.C. (1981): *Design methods: seeds of human futures*, (1980 edn). New York: John Wiley & Sons.
- [13] McGee, C., Reardon, C. & Clarke, D. (2013). *Home technical manual: passive design Orientation*. Retrieved from: <http://www.yourhome.gov.au/technical/>
- [14] Moore, G.T. (1974). "Environment- behavior studies", in J.C. Synder and A.J. Catanese (eds) *Introduction to Architecture*.
- [15] Senosiain, J. (2003) *Bio-Architecture*. Architectural Press. An Imprint of Elsevier Linacre House, Jordan Hill, Oxford.
- [16] Steven, W. (2004): *Design, the Art and Science involved in the planning and making of a Product, Tool, Artifact, Building or service*. Microsoft Encarta premium suite.
- [17] Szokolay, S.V. (1992): "Design and research issues-Passive control in the tropics" In: *Proceedings of the 1st World Renewable Energy congress Vol. 4*, Sayigh A.A.M. Ed. Solar and low energy Architecture, Pergamon Press. Oxford U.K.

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