A STUDY OF ARCHITECTURAL MONUMENTS IN SOUTH-EAST ZONE OF NIGERIA: EVOLVING APPROPRIATE LISTING CRITERIA

BEING A THESIS PRESENTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF DOCTOR OF PHILOSOPHY DEGREE (PhD) IN ARCHITECTURE

BY

NDUKA EMMANUEL OKECHUKWU B.Sc. Arch, UNN, M.Sc. Arch, UNN

PG/PhD/04/38166

DEPARTMENT OF ARCHITECTURE UNIVERSITY OF NIGERIA, ENUGU CAMPUS

SUPERVISOR: PROF. ARC. B. C. CHUKWUALI, mnia, ksm.

MARCH 2013

TABLE OF CONTENTS

TITLE PAGE		•	•	•	•	•	•	•	•	ii
DECLARATION .							•	•		iii
APPROVAL/CERTIFI	ICATI	ON								iv
DEDICATION .							•			v
ACKNOWLEDGEME	NTS		•	•						vi
TABLE OF CONTEN	ТS		•	•						vii
LIST OF TABLES .			•	•						xi
LIST OF FIGURES .					•		•	•	•	xii
ABSTRACT			•	•						xiii
CHAPTER ONE										
										1

1.0	INTRODUCTION	•	•	•	•	•	•	I
1.1	BACKGROUND OF STUDY							1
1.2	STATEMENT OF PROBLEM							6
1.3	AIM OF STUDY	•						6
1.4	STUDY OBJECTIVES .	•						6
1.5	RESEARCH QUESTIONS .	•						7
1.6	HYPOTHESIS	•						7
1.7	SCOPE AND DELIMITATION OF S	STUDY	7	•	•			7
1.8	SIGNIFICANCE OF STUDY		•	•	•		•	8
1.9	POTENTIALS AND LIMITATIONS	OF ST	TUDY	•	•		•	8
1.10	JUSTIFICATION OF STUDY					•		9

CHAPTER TWO

			Х							
2.2	ETHNIC COMPOSITION	Ι.								11
2.1	LOCATION	•		•	•	•	•	•	•	10
2.0	STUDY AREA .			•	•	•	•	•	•	10

2.3	SOUTH EAST GEOPOLITICAL ZONE	•	14
CHA	PTER THREE		
3.0	LITERATURE REVIEW/THEORETICAL FRAMEWORK		18
3.1	INTRODUCTION		18
3.2	MONUMENT		18
3.3	ARCHITECTURE		21
3.4	ARCHITECTURE IN NIGERIA		23
3.5	SOUTH SOUTHERN ARCHITECTURE		26
3.6	SOUTH EASTERN ARCHITECTURE		29
3.7	SOUTH WESTERN ARCHITECTURE		35
3.8	NORTHERN SAVANNAH ARCHITECTURE		36
3.9	EXTERNAL ARCHITECTURAL INFLUENCE		41
3.10	TRADITIONAL NIGERIA ARCHITECTURAL ELEMEMNTS		44
3.11	ARCHITECTURAL MONUMENT		51
3.12	MONUMENTALITY QUESTION		53
3.13	MONUMENTS OWNERSHIP CLASSIFICATION .		62
3.14	DECLARED, SCHEDULED AND POTENTIAL MONUMENTS		62
3.15	LISTING OF MONUMENTS		65
3.16	CRITERIA FOR LISTING		67
3.17	DEFINITION OF CULTURAL HERITAGE		69
3.18	DEFINITION OF NATURAL HERITAGE		71
3.19	LISTING CATEGORY		73
3.20	PROCEDURE FOR DECLARING NATIONAL MONUMENT		73
3.21	CRITERIA FOR LISTING MONUMENTS IN NIGERIA .		75
3.22	LISTED BUILDINGS AND ARCHITECTURAL MONUMENTS		
	IN NIGERIA		75
3.23	THEORETICAL FRAMEWORK		89
3.24	FOREIGN EXPERIENCE		90
3.25	TAJ MAHAL		90

3.26	ARCHITECTURE OF TAJ MAHAL .			•		92
3.27	POSSIBLE CRITERIA FOR LISTING AS MONUI	MENT	•			105
3.28	BAHA'I HOUSE OF WORSHIP		•	•		108
3.29	ARCHITECTURE OF BAHA'I HOUSE OF WORS	SHIP	•	•		110
3.30	POSSIBLE CRITERIA FOR LISTING AS MONUI	MENT	•	•		119
3.31	POSSIBLE REGIONAL CRITERIA FOR SELECT	ΈD				
	FOREIGN CASE STUDIES					122
3.32	LOCAL EXPERIENCE					126
3.33	OJUKWU BUNKER	•	•			129
3.34	POSSIBLE CRITERIA FOR LISTING AS MONUI	MENT				133
3.35	CHIEF NWODO'S HOUSE					134
3.36	POSSIBLE CRITERIA FOR LISTING AS MONUI	MENT	•	•	•	135
CHA	PTER FOUR					
4.0	RESEARCH METHODOLOGY AND PROCEDUR	RES	•	•	•	137
4.1	INTRODUCTION	•	•	•	•	137
4.2	TYPES AND SOURCES OF DATA .	•	•	•		138
4.3	SAMPLE POPULATION, SAMPLE SIZE AND SA	AMPLI	NG			
	TECHNIQUE	•	•	•	•	139
4.4	SURVEY AND DATA COLLECTION METHOD.		•	•	•	142
4.4.1	SAMPLING INSTRUMENT (QUESTIONNIARE)	•	•	•	•	142
4.5	DESCRIPTION OF SAMPLING INSTRUMENT	•	•	•	•	143
4.6	SAMPLE QUESTIONNAIRE		•	•	•	144
4.7	STATISTICAL TECHNIQUE FOR DATA ANALY	YSIS	•	•	•	146

CHAPTER FIVE

5.0	DATA PRESENTATION, ANALYSIS AND FINDINGS	•	•		147
5.1	DATA COMPILATION AND CLASSIFICATION	•	•		147
5.2	DATA ANALYSIS AND FINDINGS	•	•	•	167

5.2.1	DATA ANALYSIS		•	•	•	•	•	•	•	167
5.2.2	FINDINGS .						•			171
5.3	DISCUSSION.						•			173
5.3.1	ANSWERS TO RES	EARCH	I QUES	TIONS	AND	ΓEST				
	OF HYPOTHESIS	•	•	•		•	•			173
5.3.2	TEST FINDINGS AI	ND RES	SULTS	•			•	•		173
5.3.3	SUMMARY OF LIS	TING C	RITER	IA	•	•				175

CHAPTER SIX

6.0	CONTRIBUTION TO KNOWLEDGE, RECOMMENDATION AND										
	CONCLUSION									177	
6.1	CONTRIBUTION 7	ΓΟ ΚΝ	OWLE	DGE						177	
6.2	RECOMMENDAT	ION								178	
6.3	CONCLUSION					•	•	•	•	179	
	REFERENCES					•	•	•	•	180	
	APPENDIX .	•	•							188	

LIST OF TABLES

TABLE 5.1:	ABIA STATE FIELD SURVEY DATA .		•	•	148
TABLE 5.2:	ANAMBRA STATE FIELD SURVEY DATA			•	152
TABLE 5.3:	EBONYI STATE FIELD SURVEY DATA .		•	•	156
TABLE 5.4:	ENUGU STATE FIELD SURVEY DATA .	•	•		160
TABLE 5.5:	IMO STATE FIELD SURVEY DATA .		•	•	164
TABLE 5.6:	PRINCIPAL COMPONENT MATRIX .	•	•		168
TABLE 5.7:	TOTAL EXPLAINED VARIANCE	•	•		169
TABLE 5.8:	ROTATED PRINCIPAL COMPONENT MATRI	Χ.	•	•	170
TABLE 5.9:	TOTAL ROTATED EXPLAINED VARIANCE	•	•	•	170
TABLE 5.10:	FACTOR ANALYSIS/PRINCIPAL COMPONEN	JT			
	ANALYSIS RESULTS				174

3.28 The Baha'i House of Worship

The Baha'i House of Worship popularly, referred to as the 'Lotus Temple' is an architectural beauty to behold (Figure 3.70). It is believed that this structure revolutionized the concept of worship by its design and serene spiritual atmosphere. This monument in marble is dedicated to the purpose of prayer, meditation and spiritual upliftment. There is no clergy in the temple, no idols, no pictures, no sermons, and no rituals. It is a place for communication between man and his creator God.



Figure 3.70: Baha'i House of Worship (Lotus Temple) Source: <u>http://en.wikipedia.ng/wiki/Lotus_Temple</u>

According to Ravi Shankar, the sitar maestro, recounting his experience when he visited the Lotus Temple said he was, "so deeply moved visiting this great beautiful place that I find no words to express my feelings". Dizzy Gillespie, the late renowned Baha'i jazz musician exclaimed, "I cannot believe it! It is God's work" and an Indian diplomat described the Lotus Temple as a "symbol of spiritual refinement of mankind" (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html).

The Baha'i House of Worship became the recipient of accolades and world-wide acclaim soon after its completion in December 21, 1986. Work on the temple started on April 21, 1980. The following are some of the awards:

- Award for **excellence in religious art and architecture for 1987** was conferred upon Mr. Fariborz Sabha (Lotus Temple Architect) by the International Federation for Religious Art and Architecture, USA.
- Award for structural design, for producing a building so emulating the beauty of a flower and so striking in its visual impact 1987, by the Institute of structural Engineers, UK.
- Award for **excellence of its outdoor illumination** 1988, by the illuminating Engineering Society, North America.
- Award for "the most finely built concrete structures" 1990, by the American Concrete Institute, USA.
- Award for the magnitude of service in promoting unity and harmony of people of all nations, religions and social strata, to an extent unsurpassed by any other architectural monument world-wide 2000, by the GlobArt Academy of Vienna, Austria (http://www.indianetzone.com/2/bahai-temple.htm; http://en.wikipedia.org/wiki/Lotus_Temple; http://bahaikipedia.org/India; http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html).

This House of Worship is located in New Delhi, the capital city of India and was dedicated to public worship in December 24, 1986. It sits on an area of 26 acres of land.

3.29 Architecture of the Baha'i House of Worship

It is believed that the 'Lotus Temple' is in obedience to the command of Baha'u'llah enshrined in the most holy book of the Baha'i religion which states, "*O people of creation, build ye houses as perfect as can be built on earth in the name of Him who is the Lord of Revelation...*"Therefore, Baha'is have endeavoured to their utmost to build houses of worship as beautiful and distinctive as possible (<u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html</u>).

The Baha'i House of worship sometimes referred to as 'Taj Mahal of the 20th century' or 'the marvel of 20th century architecture' is a massive pure white marble structure whose concept was derived from the *lotus flower*, an India sacred flower, found commonly in dirty stagnant water but rising up pure and unsullied. Also the lotus flower, besides being the national flower of India, has been associated with religion (Hinduism, Buddhism, Zoroastrianism or Islam) and religious activities in India. It is believed that the lotus symbolizes the purity and tenderness of spiritual reality as it rises, untouched, unblemished from the stagnant pools and quagmires of the earth. It reminds man that he too can achieve this state while still living in this material world (<u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architectural-marvel.html</u>).

Mr. Fariburz Sabha (Architect of the lotus temple) reacting to the issue of the "lotus" concept said, "I was looking for a concept that would be acceptable to the people of all the different religions that abound with such rich diversity in India. I wanted to design something new and unique, at the same time not strange but familiar...something which would be loved by the people of different religions. I studied the art, culture and religions of India from books...The deep respect for the lotus, spontaneously evoked in India hearts everywhere...loving attachment to this sacred flower, convinced me to end my search for further ideas for the design. However the critical question...yet to be answered...how a flower could be translated into a building?" (http://bahai.in/bahai-House-of-Worship/meet-the-architect/extracts-frominterviews-with-the-architect.html). Thus by adopting the form of the lotus flower, the temple gives the impression of a lotus flower yet to blossom (half-open) afloat and surrounded by its leaves (Figure 3.71). The temple complex is made up of the house of worship, basement floor (housing service components like mechanical and electrical systems), library, reception centre, administrative building, and ancillary block, restrooms block and garden. There are walkways around the structure with beautiful curved balustrades, bridges and stairs, which surround the nine pools (Figure 3.72).



Figure 3.71: Lotus Temple surrounded by Water Pools and Walkways. Source: <u>http://bahaikipedia.org/India</u>.



Figure 3.72: (1-r) Lotus Temple view showing Water Pools and suspended Terraces with Balustrade Source: <u>http://en.wikipedia.ng/wiki/Lotus_Temple</u>

Decoration of the Lotus Temple

The Baha'i House of Worship though complex in architectural and engineering designs is devoid of any symbol or image of any idol or god which commonly is found in most houses of worship, temples and religious buildings. This is based on the fact of the Baha'i core teaching principle of oneness of God, religion and mankind.

This house of worship is basically, finished and decorated in white marble. The flooring of the auditorium is of white marble, the finish of the walkways and stairs of the outer portion is of red sandstone thus offering a majestic contrast. The most basic idea in the design of this house of worship is that of light and water, used as its fundamental elements are responsible for the ornamentation of the temple in the place of the statues and carvings found in other temples (Figure 3.73) (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-



Figure 3.73: (l-r) Views of the Entry Points to the Temple showing the red sandstone Walkway/Entry flooring, curved Balustrade and white marble shells Source: <u>http://en.wikipedia.ng/wiki/Lotus_Temple</u>

Garden/Landscape of the Lotus Temple

The Lotus Temple is planted on a well designed and landscaped garden with water pools and fountain. Water pools and fountains are very important landscape elements in Indian gardens and the Lotus Temple has its own share of these landscape elements. Also, these pools and fountains around the Lotus Temple help to cool the air that passes over them into the temple and at the same time, the green lawns, represent the green leaves of the lotus flower afloat on water (Figure 3.74).

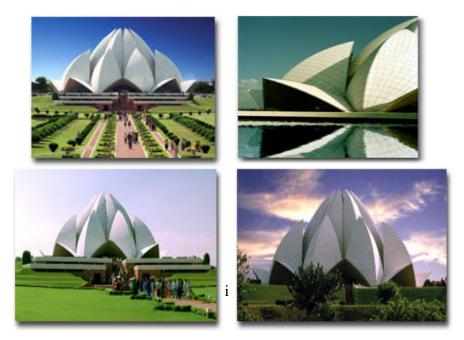


Figure 3.74: Top and Bottom (l-r) various views of the Lotus Temple showing well designed and Landscaped Garden, Water Pool and Fountain. Source: <u>http://en.wikipedia.ng/wiki/Lotus_Temple</u>

The climate in India has been observed to be very hot for several months in the year. Thus the problem of ventilating the worship space became apparent. Ventilating this space artificially, would be very expensive to install and maintain, thus 'natural ventilation' system based upon 'smoke test' performed in Imperial College of London was adopted. The results demonstrated that with openings in the basement and at the top, the building acts like a chimney drawing up warm air from within the worship hall and expelling same through the opening at the top of the dome (Figure 3.75). Also, complementing this "chimney" system of ventilation, are two other ways:

- a. A set of exhaust fans arranged in the dome to cool the concrete shell and prevent transference of heat back into the temple
- b. A set of fans funnel air from the auditorium into the cold basement where it is cooled and recycled back into the auditorium (<u>http://bahai.in/Bahai-House-of-Worship/meet-the-architect/extracts-from-interviews-with-the-architect.html</u>).





Figure 3.75: (l-r) Opening on top of the Dome with exhaust fans to aid natural ventilation through horizontal openings (r) at the basement level Source: <u>http://en.wikipedia.ng/wiki/Lotus_Temple</u>

Construction of the Lotus Temple

The construction started April 21, 1980 and was completed December 21, 1986 (6yrs and 8mths). Flint and Neill Partnership of London were the consultants and the ECC Construction Group of Larsen and Toubro Limited were the contractors that executed the construction of the temple (<u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architectural-marvel.html</u>; <u>http://bahai.in/Bahai-house-of-Worship/meet-the-architect/extracts-from-interviews-with-the-architect.html</u>).

The Baha'i temple designed with the concept of a lotus flower afloat, inspired serious structural engineering tasks. This beautiful concept of the lotus had to be converted into definable geometrical forms like spheres, cylinders and cones, which were translated into equations and then used as a basis for structural analysis and engineering drawings. The resultant geometry was so complex that it took the designers over two and half years to complete the detailed drawings of the temple (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/architectural-blossoming-of-the-lotus.html).

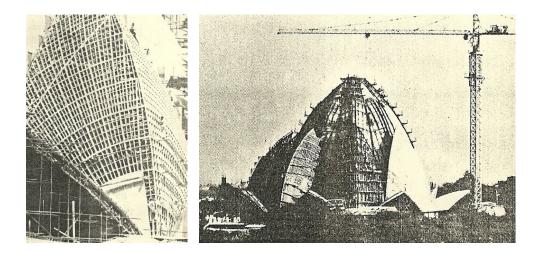
The lotus flower has three sets of petals (nine petals per set). The outermost set of nine petals referred to as the 'entrance leaves', open outwards forming the nine entrances all around the temple. The next set of nine petals (inner leaves) which appear partly closed, rise above the 'entrance leaves' to form the main structure housing the central hall. Then the last set of petals partly open at the top is covered with a glass and steel roof providing protection from rain and functioning as skylight, introducing natural light into the auditorium (Figure 3.76).



Figure 3.76: View of the Lotus Temple at night, showing some of the 'entrance leaves' and the partly open patels defining Temple. Source: <u>http://en.wikipedia.ng/wiki/Lotus_Temple</u>

Due to the complexity of the design, the construction was done in stages. The structure was divided into convenient parts – first the basement and the inner podium were done; then the arches, all nine arches were cast one after the other in two lifts until the circle was completed. The inner leaf, radial beams and central hub commenced after the completion of all the arches. Then structural steel staging for the inner leaf was erected. The shells (120 degrees apart) were taken up three at a time, and cast in two lifts, one after the other, up to the radial beam level, ensuring always that the difference in height between the shells cast was not more than one lift. This process was repeated until all nine segments were cast.

Casting of the central hub was done as an independent activity, and after all the shells were cast, they were connected to the hub by casting the radial beams. Then allowing for sufficient curing for the concrete, the inner leaf along with the radial beams were de-scaffold, leaving the central hub supported. Later, the remaining portion of the inner leaf was done (Figure 3.77) (Ibid).



The interior dome was done after de-scaffolding (removal of framework) the inner leaf. The steel staging was modified and two folds of the interior dome shells were done one after another. For each fold, three shells (120 degrees apart), were done at a time and cast one after another. The boundary rib for each shell was done first and then the shell cast in one single lift. This process was repeated until all the shells were completed. The entrance and outer leaves were done as a parallel activity with the casting of the inner leaves and interior dome. Two entrance leaves and one intermediate outer leaf were done first. Thereafter, the outer and entrance leaves were cast alternately, first the outer leaf and then the adjacent entrance leaves. De-shuttering (removal of formwork) started with the outer leaves and followed by the intermediate entrance leaf. In this manner the remaining leaves were de-shuttered as and when the concrete attained full strength and the leaves adjacent to the shell to be de-shuttered were cast (Ibid).

The ambient temperature in India during summer was observed to be as high as 45 degrees Celsius therefore; the temperature of the concrete was controlled by adding a measured quantity of ice and by the pre-cooling of aggregates in air-cooled aggregate storage bins. Also, the entire concrete area was covered by tarpaulins to prevent cold joints due to stoppage of work during heavy rains and rain water entering the formworks (<u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/architectural-blossoming-of-the-lotus.html</u>; Indian Baha'i News, 1987).

Construction Materials and Labour

According to records, about 10,000 sq meters of marble quarried from the Mount Pentilekon mines of Greece was sent to Italy where each panel was cut to the required size and shape to suit the geometry and architectural pattern before transporting them to the site in India (Figure 3.78) (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/architectural-blossomingof-the-lotus.html). Tests carried out on Indian cement revealed that the strength and other

properties varied considerably and the colour did not meet the architectural requirement (white structure). Thus, the entire quantity of white cement used was imported from Korea. Specially graded dolomite aggregates were procured from Alwar mines near Delhi and white silica sand from Jaipur. The reinforcement used in the white concrete shells as well as the binding wires were galvanized to prevent rusting of reinforcement on the white concrete (Ibid).

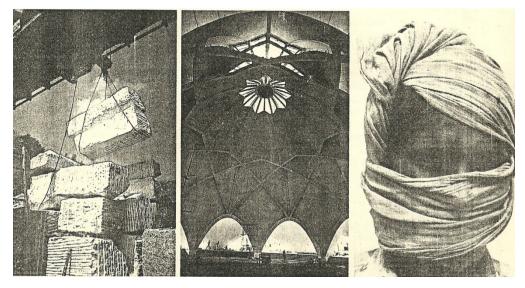


Figure 3.78: (l-r) View showing construction material (marbles), interior of the Temple and a workman Source: Indian Baha'i News, 1990

Galvanized reinforcement for concrete it was observed is seldom used in India thus several tests were carried out to ensure that the mechanical properties of reinforcement would not be adversely affected due to galvanizing. A lot of timber was used for support and formwork; plywood for forming the petals (shells) with a protective coating applied over the surface, the plywood sheathing was lined by fibre-reinforced plastic sheets and joints sealed with epoxy resin and plaster of Paris. After the removal of the outer forms, the exposed surface of the concrete was covered with hessian and cured for twenty eight (28) days by keeping it wet continuously, using a sprinkler arrangement fixed at the top of the shells. White marble panels are fixed to the concrete surface with specially designed stainless steel brackets and anchors. It is worthy to note that all the marble work was carried out by carpenters who learned the skill of marble fixing within a few weeks, and were able to complete the work to the required

accuracy, two months ahead of the scheduled completion time. Besides the main consultants (Flint and Neill Partnership London) and contractors (Larsen and Toubro of ECC construction group), forty (40) engineers and eight hundred (800) labourers and skilled men (carpenters, fitters, bricklayers, glazers to mention a few) mostly of Baha'i faith, worked day and night to erect the splendid edifice (Ibid).

Cost of the Lotus Temple

The Lotus Temple it is remarkable to note, was funded through voluntary contributions made only by Baha'is throughout the world with a large sum of the funds having been provided by the believers in India. An Indian scholar who visited the lotus temple summed up this spirit of universal participation among the Baha'is told Mr. Fariborz Sabha (architect of the lotus temple) that, '*The Taj Mahal was built with the power of a king, but you are building this majestic edifice with the power of love*" (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architectural-marvel.html; Indian Baha'i News, 1987).

The total cost of the building was estimated to about ten (10) crore rupees (\$30m); including all furniture and landscape. Actually, the Lotus Temple if considered commercially would have cost several times more. The whole project was not based on commercial considerations but on sacrifice and devotion. From the labourers to the supervisors, engineers and suppliers, all took it as a challenge and labour of love. Many worked totally voluntarily; some accepted a bare minimum wage for their expenses. According to Fariburz Sahba (the architect of Lotus Temple), '...it is mostly the poor people who have supported this project because of their appreciation of love, unity and beauty... .' (http://bahai.in/Bahai-House-of-Worship/meet-the-architect/extracts-from-interviews-with-the-architect.html). It is impossible to value the Lotus Temple by the standard scales available for quality survey or project management. But conservatively, the cost was estimated at Rs 10,000,000 (about \$30m USD) as at the time (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architecttural-marvel.html; Indian Baha'i News, 1987).

3.30 Possible Criteria for Listing as Monument

History behind the building

The Baha'i House of Worship (Lotus Temple), according to Indian Baha'i News 1987, was inspired by God stemming from the Baha'is principle of oneness – of God, religion and mankind, and obedience to the command of Baha'u'llah enshrined in the most holy book of the Baha'i religion, "*O people of creation, build ye houses as perfect as can be built on earth in the name of Him who is the Lord of Revelation*..." Shoghi Effendi, the Guardian of Baha'i faith initiated the process of building magnificent edifices at the World Centre of the Baha'i religion in Halifa Israel (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html).

Mode of Project Execution

The Baha'i House of Worship was executed through voluntary contributions and sacrifices made only by Baha'is (rich or poor) worldwide with the largest contribution having been made by the believer in India. They gave to the Glory of God to demonstrate their love for Him and believed such a monument will attract divine bounties and the spiritual atmosphere it will create will inspire many lives. The project cost cannot be commercially estimated because everything was based on voluntary sacrifice by Baha'i faithful (<u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architectural-marvel.html</u>; <u>http://bahai.in/Bahai-House-of-Worship/meet-the-architect/extracts-from-interviews-with-the-architect.html</u>; Indian Baha'i News, 1987).

Design Style

The Baha'i House of Worship described as a **'symbol of spiritual refinement of mankind'** was indeed, a significant chapter in the making of Baha'i history on the Indian sub-continent. To describe merely the beauty and symmetry of the architecture of the Lotus Temple is not sufficient to immortalize a building. The architectural ingenuity (transformation of the image of a flower into an architectural structure), the design of the structure in the sense that there is no single straight line, every line is curved making every measurement a complicated

procedure and the feeling the structure evokes in the hearts of the people is important! Some comments retrieved from the visitors' book stated, that the Baha'i House of Worship, is 'the most beautiful building ever made', 'marvel of architecture' and 'Eight Wonder of the World'. Ravi Shankar, (sitar maestro) recalled he was "so deeply moved visiting this great beautiful place, that he found no words to express his feelings..." Dizzy Gillespie, (late Baha'i Jazz musician) exclaimed, "I cannot believe it! It is God's work" Mr. Fariburz Sabha, (Architect of Baha'i House of Worship) in his testimony said he desired "To design a temple which would reflect the rich cultural heritage of India and at the same time, be compatible with the cardinal principle of the Baha'i Faith, that is the unity of religions...It should, on one hand, reveal the simplicity, clarity and freshness of the Baha'i revelation as apart from the beliefs and man-made concepts of many divided sects and, on the other, should show respect for the basic beliefs of all religions of the past and act as a constant reminder to the followers of each faith that the basic principles of all the religions of God are one" (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-forhttp://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architecturalthe-heart.html; marvel.html; http://bahai.in/Bahai-House-of-Worship/meet-the-architect/extracts-frominterviews-with-the-architect.html).

Construction Materials and Technology

The Lotus Temple so emulating the beauty of a flower and so striking in its visual impact is regarded as "one of the most finely built concrete structure" (American Concrete Institute; 1990). Many of the construction materials were used for the first time in India. Examples are white concrete and galvanized reinforcement (Indian Baha'i News, 1987). Other materials used include; 10,000 sq meters of marble from Greece, white cement from Korea, specially graded dolomite aggregates from Alwar near Delhi and white silica sand from Jaipur, a lot timber and plywood (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/architectural-blossoming-of-the-lotus.html). According to Fariburz Sahba, they had to do a lot of things for the first time in order to realize the structure. A unique and complex concreting procedure was developed where the concrete shells (13 cm thick and 25 m high) were cast in one continuous

operation, round the clock, during monsoon/peak summer season when the temperatures soar beyond 45 dgrees Celcius. The design of the structure was such that there was not one single straight line. Everything was in curvature, making every measurement a complicated procedure. The whole operation was carried out on the basis of thousands of geometrical co-ordinates. Also, it is worthy to note that all the marble work was done by carpenters who learnt the skill of marble fixing within a few weeks and were able to complete the work, to the required accuracy, two months ahead of the scheduled completion time (<u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/architectural-blossoming-of-the-lotus.html</u>; Indian Baha'i News, 1987).

Size/Scale of Structure

The Lotus Temple is one of the marvels of modern architecture. The impressive shining pure white marble, the majestic dome, the petals clearly standing out create a sense of grandeur and awe. The temple gives the impression of a half-open lotus flower afloat, surrounded by its leaves thereby capturing the imagination with its simplicity and elegance. This monument in marble is dedicated to the purpose of prayer, meditation and spiritual upliftment, and covers an expanse of 26 acres of land (See Figure 3.71) (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html;

http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architectural-marvel.html).

Design Elements

All around the Lotus Temple are walkways with beautiful curved balustrades, foot bridges and stairs that surround the nine pools representing the floating leaves of the lotus. Also the most basic idea in the design is that light and water are used as two fundamental elements for the ornamentation of the temple in the place of statues and carvings found in other temples. Flowers, shrubs and green grasses were used to create a serene environment. It is a remarkable tabernacle of peace and beauty and an engineering feat that will set standards for centuries (http://bahai.in/Bahai-House-of-Worhip/Stories-Articles/an-architecrual<u>marvel.html</u>; <u>http://www.bahaihouseofworship.in/jewel-in-the-lotus</u>; <u>http://bahai.in/Bahai-</u> <u>House-of-Worship/Stories-Articles/architectural-blossoming-of-the-lotus.html</u>).

3.31 Possible Regional Criteria for Selected Foreign Case Studies

Architectural monument as had been stated earlier, is classified under cultural heritage by the UNESCO and for any structure to be listed as architectural monument, it must be of outstanding universal value and meet at least one or more of the criteria for listing cultural heritage which are as listed below:

- 1. represent a masterpiece of human creative genius;
- 2. exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on development in architecture or technology, monumental arts, town-planning or landscape design;
- bear a unique or at least exceptional testimony to a cultural tradition or to a civilization which is living or which has disappeared;
- 4. be an outstanding example of a type of building, architectural or technological ensemble or landscape which illustrates a significant stage in human history;
- 5. be an outstanding example of a traditional human settlement, land-use, or sea-use which is representative of a culture, or human interaction with the environment especially when it has become vulnerable under the impact of irreversible change;
- 6. be directly or tangibly associated with events or living traditions, with ideas, or with beliefs, with artistic and literary works of outstanding universal significance. The Committee considers that these criteria should preferably be used in conjunction with other criteria.

Based on the above listing criteria, the possible regional criteria for listing both the Taj Mahal and the Lotus Temple all in India, and which provided the rationale for identifying them as relevant case studies for this study are the following:

The Taj Mahal.

1. It is a unique/exceptional testimony to a religion, cultural tradition and civilization of the people who lay claim to the structure. The Taj is considered the finest and most sophisticated example of Mughal architecture, a style that combines elements from Persian, Ottoman, Indian and Islamic architectural styles. UNESCO World Heritage in 1983 cited the Taj as 'the jewel of muslim art in India and one of the universally admired masterpieces of the world's heritage' (http://en.wikipedia.org/wiki/Taj_Mahal;

http://en.wikipedia.org/wiki/origins_and_architecture_of_the_Taj_Mahal).

2. It is an outstanding example of a type of building (mausoleum) and reflected the emotions of the author (Emperor Shah Jahan). Taj Mahal was commissioned soon after the death of Mumtaz Mahal, Emperor Shah Jahan's favourate wife who died during child birth in order to immortalize his love for her. The Taj is regarded as one of the most famous and recognizable buildings in the world and was conceived and designed as an earthly replica of Mumtaz's house in paradise and an instrument of propaganda for the Emperor Shah Jahan (http://en.wikipedia.org/wiki/origins_and_architecture_of_the_Taj_Mahal)

3. Taj Mahal represents a masterpiece of human creative genius. According to the official Mughal histories, several designers and architects (about thirty seven men) were mentioned by name as forming the creative team that built the Taj Mahal. People like Ismail Afandi (a.k.a. Ismail Khan) designed and built the dome; Qazim Khan from Lahore, cast the gold finial that crowns the dome; Chiranji Lal from Delhi, was the chief mosaicist; Amanat Khan from Shiraz, was the master calligrapher whose signature is inscribed on the Taj gateway; Mohammed Hanif, Multan and Quandhar, master masons from Delhi; and Mukrimat Khan and Mir Abdul Karim from Shiraz, chief supervisors and administrators. According to a 17th century manuscript, Ustad Ahmad (a.k.a. Isa Khan) an architect from Lahore, is credited to be the chief architect of the Taj Mahal (http://www.pbs.org/treasuresoftheworld/taj mahal 2/t3build design.html

The Lotus Temple

1. The Lotus Temple, like the Taj Mahal, bears a unique/exceptional testimony to a religion, cultural tradition, values and beliefs of the people who lay claim to the structure. The Lotus

Temple not only does it embody the spiritual aspirations and basic beliefs of the Baha'i community world-wide, it evokes exceptional sentiments in the hearts of people and significantly provided a unifying link in a land of myriad religions by bringing divergent thoughts into harmony by virtue of its principle of oneness of God, religion and mankind. According to Fariburz, 'I wanted to design something new and unique, at the same time not strange but familiar...something which would be loved by the people of different religions' (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html; http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html; http://bahai.in/Bahai-House-of-Worship/Meet-the-architect/extracts-from-interviews-with-the-architect.html).

2. The Baha'i House of Worship represents a masterpiece of human creative genius in that the extremely complex design, called for the highest order of engineering ingenuity to be implemented by means of traditional workmanship. The Lotus Temple, it was observed, provided one rare exception with its remarkable fusion of ancient concept (derived from the Lotus flower), modern engineering skill, and architectural inspiration thereby, making it the focus of attention amongst engineers and architects the world over. The Indian Express (1986) aptly stated that the Lotus Temple symbolizes love between man and God and in World Architecture 1900-2000: A Critical Mosaic, Vol. 8, South Asia, the Lotus Temple is refered to as 'A powerful icon of great beauty that goes beyond its pure function of serving as a congregation space to become an important architectural symbol of the city' (Ibid).

3. The Lotus Temple is an outstanding example of a type of building (religious) and architecture. According to Fariburz Sabha (architect of the Lotus Temple), he wanted to design a temple which would reflect the rich cultural heritage of India and at the same time, be compatible with the cardinal principle of the Baha'i faith, that is the unity of religions. So he had to travel extensively in India to study its architecture before settling down to design. Fariburz observed that in India, the lotus flower has always been the fairest flower and has enjoyed an unparalleled popularity through the length and breadth of the country from the earliest times down to the present day. And besides being the national flower of India, it has been inseparably associated with religion, be it Hinduism, Buddhism, Zoroastrianism or Islam (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/an-architectural-marvel.html;

http://www.bahaihouseofworship.in/jewel-in-the-lotus; http://bahai.in/Bahai-House-of-Worship/meet-the-architect/extracts-from-interviews-with-the-architect.html).

4. The Lotus Temple exhibits a unique development in architecture and monumental arts. The simplicity in decoration (devoid of any idols, statues, paintings/pictures or any religious elements) yet unique in aesthetics and grandeur, elicited bewilderment as well as favourable responses. According to Fariburz, he would feel successful if he could design something that communicates to people and creates such a relationship like that is between the artist, his work and the people which is the most satisfying factor in the art of architecture. Some visitors commented thus: 'The most beautiful experience. Its magnificence, charm and glamour are awe-inspiring. It reflects the dream of all humanity to bring together a new civilization for all people' 'Architecturally, artistically, ethnically, the edifice is a paragon of perfection' (http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-magnet-for-the-heart.html; http://bahai.in/Bahai-House-of-Worship/Nete-the-architect/extracts-from-interviews-with-the-architect.html).

3.32 Local Experience

In discussing the local experience, it is only the officially listed architectural monuments found in the study area (South East zone of Nigeria) that are considered. According to an official document from the National Commission for Museums and Monuments (NCMM), there are four (4) listed architectural monuments in Abia State, one (1) in Enugu State and one (1) in Anambra State (NCMM, REF: TF 128/T/Vol.II/373/August 19, 2010).

The following are the listed monuments in the South East zone:

Abia State: Chief Okoroji's House in Arochukwu, declared monument on March 19, 1953; Obu House in Elu Ohafia, declared monument on March 19, 1963; Chief Ochu Kalu's House at Ndi Okereke Abam near Bende, declared monument on March 19, 1963 and Omo Ukwu of national and state economy. Furthermore, studies should be conducted with respect to identifying the various appropriate listing criteria for architectural monuments in other zones of Nigeria with a view to compiling comprehensive listing criteria for architectural monuments in Nigeria.

REFERENCES

- 1. Abia State. Retrieved from http://www.nigeriagalleria.com/Nigeria/States Nigeria/Abia State.html. 2. Archibong, M. (2008). Travels; Koko: Lore of a Museum Town called New America; Daily Sun Newspaper, March13 p. 28. 3. Adam, G. (2003). Longman Dictionary of Contemporary English; Third Edition, Pearson Education Ltd., England. Adeboboye, T. (2010). Umuahia: Inside Ojukwu's Bunker; Sunday Sun Newspaper, 4. Jan. 10, p. 27-30. 5. Ahmad, A. G. (2006). Cultural Heritage of Southeast Asia: Preservation for World Recognition; Journal of Malaysian Town Plan, Vol. 03, Issue 01, Jan., p. 52-62. Retrieved from http://www.hbp.usm.my/conservation/ASEANHeritage/culturalheritage.htm. 6. Anambra Retrieved from State. http://www.nigeriagalleria.com/Nigeria/States_Nigeria/Anambra_State.html.
- 7. Anambra State. Retrieved from http://www.anambrsstate.gov.ng.

- Anderson, L. B. (2007). Architecture (Building) Microsoft Student Encarta Encyclopaedia, 2008.
- 9. Assop Waterfalls. Retrieved from <u>http://vencarta.com/assop-water-falls</u>.
- 10. Boonie, O. (n.d.). Olumo Rock Retrieved from http://www.motherlandnigeria.com/../olumo_rock.jpg.
- 11. Boonie, O. (n.d.). Ikogosi Springs Retrieved from http://www.motherlandnigeria.com/../ikogosi_springs.jpg.
- Boonie, O. (n.d.). Earthen Granery Retrieved from <u>http://www.motherlandnigeria.com/../traditional_granery_in_north.jpg;</u> <u>http://www.motherlandnigeria.com/../new_post10.jpg</u>.
- 13. Brooklyn Bridge (n.d.). Retrieved from <u>http://photobucket.com/images/brooklybridge</u>.
- Brooks, L. (1997). Monuments: Masterpieces of Architecture, TODTRI Book Publishers, New York.
- Chukwuali, B. C. (2004). Traditional Housing System in Nigeria: An Analysis of Principles, Concepts and Determinant Factors, Architecture: Research and Practice; Journal of NIA Enugu State Chapter, Vol.1 No.2 March, p. 9-18.
- Chukwuali, B. C. (2005). The Influence of Cultural Pluralism on Architectural Practice in Nigeria: The Content, the Context and the Imperatives, Architecture: Research and Practice; Journal of NIA Enugu State Chapter, Vol.1 No.3 Nov. p. 13-20.
- 17. Collins (2009). Atlas for Nigeria, HarperCollins Publishers, London.
- Creighton, T. H. (1962). The Architecture of Monuments; Reinhold Publishing Corporation, New York.
- 19. Criteria (2005). Retrieved from: <u>http://whc.unesco.org/en/criteria/</u>.
- 20. Cultural Heritage (April 2008). Retrieved from http://www.environment.gov.au/heritage/about/world/criteria.html,
- Dmochowski, Z. R. (1990). An Introduction to Nigerian Traditional Architecture: Northern Nigeria; Ethnographica Ltd., Great Britain Vol. I, p. 5.28.

- Dmochowski, Z. R. (1990). An Introduction to Nigerian Traditional Architecture: South-West and Central Nigeria; Ethnographica Ltd., Great Britain Vol. II, pps. 1.35, 1.18, and 2.55.
- Dmochowski, Z. R. (1990). An Introduction to Nigerian Traditional Architecture: South-Eastern Nigeria, The Igbo Speaking Area; Ethnographica Ltd., Great Britain Vol. III, pps.59, 70, 71, 227 and 235.
- 24. Declared Monuments (n.d.) Retrieved from <u>http://ojeikere.blogspot.com/2009/06/declared-monuments-and-site-in-nigeria.html</u> and <u>http://www.e-nigeria.net/museum.html</u>.
- 25. Devils Tower (Oct.3, 2008). Retrieved from <u>http://www.nps.gov/deto</u>
- 26.
 Ebonyi
 State
 (n.d.).
 Retrieved
 from

 http://www.nigeriagalleria.com/Nigeria/States_Nigeria/Ebonyi_State.html.
- Edem, E. E. (2009). Architecture of Ibiobioland: In Search of Style; Unpublished Ph.D Thesis, Dept of Architecture, Faculty of Environmental Studies, Abia State University Uturu.
- Encarta Dictionary (2007). Microsoft
 Student 2008 [DVD] Redmond, WA: Microsoft Corporation.
- 29. Encarta Encyclopaedia (2008). "Architecture Quotations". Microsoft ® Student 2008[DVD] Redmond, WA: Microsoft Corporation.
- Eneh, A. E. O. (2008). Architecture as a Multipartite Discipline; AARCHES Journal Vol. 7 No. 2, April-Sept., p. 9-16.
- 31. Enogholase, G. (2006). 100 years of First Storey Building in Benin; Vanguard Newspaper, Sept. 29, p. 52.
- 32. Enugu State (n.d.). Retrieved from http://www.nigeriagalleria.com/Nigeria/States_Nigeria/Enugu_State.html.
- Fletcher, B. (1990). A History of Architecture, Twentieth Edition, Dan Cruickshank (Ed), CBS Publishers India, p. 225-281.

- FMCT, (2005). Federal Ministry of Culture and Tourism, International Tourism Promotion and Co-operation Dept.; Nigeria...Heart of Africa Tourists Guide Pamphlet.
- 35. First Storey Building in Badagry (n.d.). Retrieved from http://www.freemaninstitute.com/nigeria14.htm.
- FMCT, (2007). Federal Ministry of Culture and Tourism, International Tourism Promotion and Co-operation Dept., Abuja, Map of Nigeria Pamphlet.
- 37. Fort Dikwa (Rabeh's House) Borno State. Retrieved from http://www.northernnigeriatourism.com.
- 38. Gidan Madaki. Retrieved from <u>http://www.nigeriamuseums.org/monuments.htm</u>.
- 39. Gidan Makama, Kano. Retrieved from <u>http://www.uiowa.edu</u>.
- 40.
 Gobirau
 Minerate,
 Katsina.
 Retrieved
 from

 http://www.nationalmirrowonline.net/arts_culture_new.
 Antiperate
 Antiperat
 Antiperat
 Antiperate
 <td
- 41. Grand Canyon (Jan. 2010). Retrieved from <u>http://www.nps.gov/grca</u>.
- 42. Heritage (March 1997). Retrieved from http://www.heritage.co.uk/apavilions/glstb.html.
- 43. Historic Buildings (n.d.). Retrieved from <u>http://www.historic-</u> scotland.gov.uk/index/heritage/searchmonuments/historic_buildings.html.
- Ibe, O.; Nymphas, E. F. (2010). Temperature Variations and their Effects on Rainfall in Nigeria; Dincer et. al (Eds), Global Warming, Green Energy and Technology. Springer Publisher, p. 38.
- 45. Idanre Hills (n.d.). Retrieved from: <u>http://www.vanguardngr.com/2010/12/7-000-</u> mountain-climbers-converge.
- 46. Igwe, J.; Iweka, A.; Ogunbodede, B. (2008). Architecture: The Quest for Cultural Identity, ARCON Architects' Colloquium, First Edition, April p. 225-235.
- 47. Imo State (n.d.). Retrieved from http://www.nigeriagalleria.com/Nigeria/States_Nigeria/Imo_State.html.
- 48. Imo State (n.d.). Retrieved from <u>http://en.wikipedia.org/wiki/Imo_State</u>.

- 49 Jefferson Memorial (n.d.). Retrieved from http://en.wikipedia.org/wiki/JeffersonMemorial.
- 50. Indian Baha'i Temple. Extracts from Interviews with the Architect. Retrieved from <u>http://bahai.in/Bahai-House-of-Worship/meet-the-architect/extracts-from-interviews-</u> with-the-architect.html.
- Jokileho, J. (2008). A History of Architectural Conservation; Butterworth-Heinemann, UK.
- 52. Kano City Wall, Kano. Retrieved from <u>http://www.nigeriamuseums.org/monuments.htm</u>.
- 53. Karen, M. (2005). Encyclopaedia Britannica.
- 54. Lincoln Memorial (n.d.). Retrieved from http://en.wikipedia.org/wiki/LincolnMemorial.
- 55. Listed Buildings and Architectural Monuments in Nigeria (August 19, 2010). NCMM: TF128/T/Vol. II/373/.
- 56. Listed Buildings in Nigeria (n.d.). Retrieved from http://ojeikere.blogspot.com/2009/06/declared-monuments-and-site-in-nigeria.html.
- 57. Listed Buildings (Nov. and Dec. 2009). Retrieved from <u>http://www.historic-scotland.gov.uk/index/heritage/historicandlistedbuildings/listing.htm;</u> and <u>http://en.wikipedia.org/wiki/listedbuilding</u>.
- 58. Listing Criteria (2005, April 2008). Retrieved from <u>http://whc.unesco.org/en/criteria/;</u> http://www.environment.gov.au/heritage/about/world/criteria.html.
- Lotus Temple (1990). Retrieved from <u>http://en.wikipedia.ng/wiki/Lotus Temple;</u> Indian Baha'i News.
- 60.
 Mbari
 Shrine.
 MOTNA
 Jos.
 Retrieved
 from

 http://www.nigeriamuseums.org/monuments.htm.
- Mitias, M. H. (1994). Philosophy and Architecture; Value Inquiry Book Series (VIBS), Rodopi Publishers, Amsterdam-Atlanta, Vol. 19 p. 4.
- 62. Monument (2009). Retrieved from: <u>http://www.answers.com/topic/monument</u>.

- 63. Monument to Karl Liebnecht and Rosa Luxemburg (n.d.). Retrieved from http://www.google.com.ng/../2006/LudwigMiesvanderRoheRc;
 http://en.wikipedia.org/RosaLuxemburg;
 http://open.salon.com/blog/lostinberlin/2009/05/31/whoisburiedinrosaluxemburgstom
 http://open.salon.com/blog/lostinberlin/2009/05/31/whoisburiedinrosaluxemburgstom
- 64. Naharoy, S. (2009). Architectural blossoming of the Lotus. Retrieved from http://bahai.in/Bahai-House-of-Worship/Stories-Articles/architectural-blossoming-ofthe-lotus.html.
- 65. National Heritage (n.d.). Retrieved from <u>http://www.environment.gov.au/heritage/about/world/criteria.html</u>.
- National Monument, (2007). Chief B. O. Atuchukwu's House; Across the Nation South East, Vanguard Newspaper, Nov. 9 p. 14.
- 67. NCMM, (1979). National Commission for Museums and Monuments Decree No. 77, p. A509-A510.
- NCMM, (August 19, 2010). National Commission for Museums and Monuments; REF: TF 128/T/Vol. II/373.
- 69. Nigeria Climatic Regions (n.d.). Retrieved from http://www.photius.com/countries/nigeria/climate/nigeria_climate_climate.html.
- 70.
 Nigeria
 Population
 (n.d.).
 Retrieved
 from

 <u>http://www.tradingeconomics.com/nigeria/population.</u>
 Image: Comparison of the second se
- Nigeria Demography (n.d.). Retrieved from http://wikipedia.org/wiki/Demographics_of_Nigeria; World Population Prospects (2007). Comprehensive Tables by United Nations Dept. of Economics and Social Affairs, Population
 Affairs, Population
 Division; books.google.com.ng/books...Population+of+Nigeria+For+Ages+15-17years.
- NURP, (1992). The Nigerian Urban and Regional Planning Law; Decree No. 88, Federal Govt. Press Lagos, p. A1035-A1036.
- Obasi, S. E. (2008). Implication of Globalization on Architectural Education in Nigeria; AARCHES Journal Vol. 7 No. 2 April-Sept., p. 24-36.

- Obineche, C. (2011). Ahiara: The House that Defined the Biafran Struggle, Daily Sun Newspaper, Nov. 28 p. 11.
- 75. Okoye, I. S. (2002). Against History? A Nimo-Born Architecture of Umu Nri (Enugu Ukwu); Ijele: Art eJournal of the African World.
- 76. Old Teachers Training College, Katsina. Retrieved from <u>http://www.nigeriamuseums.org/monuments.htm</u>.
- Oluseyi, O. (2007). Form and Cultural Identities: Tribal Consciousness and Mental Images in the Development of Architectural Concepts; Sources of Architectural Form: Theory and Practice, Hussain M. Dashti (Ed), p. 381-389.
- Onodugo, et al (2010). Social Science Research: Principles, Methods and Applications, El 'Demak Publishers Enugu, p. 141
- Osuala, E. C. (2005). Introduction to Research Methodology; Third Edition, Africana-First Publishing Ltd. Onitsha Nigeria.
- 80. Osun Shrine Oshogbo, Osun State. Retrieved from http://www.nigeriamuseums.org/monuments.htm.
- Rasiwla, E. (2009). The Lotus of Bahapur: A magnet for the heart. Retrieved from <u>http://bahai.in/Bahai-House-of-Worship/Stories-Articles/the-lotus-of-bahapur-a-</u> <u>magnet-for-the-heart.html</u>.
- 82. Riyom Rock (n.d.). Retrieved from <u>http://www.motherlandnigeria.com/../riyom-</u> rock.jpg&img.
- Robert, I. (2002). Memorials, Monuments and Meaning; Architectural Records, McGraw-Hill, July p. 85.
- 84. Ron Champ Chapel (n.d.). Retrieved from http://photos.igougo.com/pictures..Ronchamp-France.html.
- Saad, T.; Ugunsusi, V. (1996). Unity in Diversity, Continuity in Change: The Traditional Architecture of Nigeria; HABITAT II United Nations Conference of Human Settlement, Istanbul Turkey, June 3-4, p. 1-21.
- 86. Sahba, F. (2009). The Jewel in the Lotus. Retrieved from http://www.bahaihouseofworship.in/jewel-in-the-lotus.

- 87. Sample Size Calculator (n.d.). Retrieved from <u>http://www.surveysystem.com/correlation.htm</u>.
- 88. Sarwal, A. (2009). An Architecutral Marvel. Retrieved from <u>http://bahai.in/Bahai-</u> House-of-Worship/Stories-Articles/an-architectural-marvel.html.
- 89. Steel Foot Bridge Zungeru, Niger State. Retrieved from http://www.nigeriamuseums.org/monuments.htm.
- 90. Taj Mahal (2009). Retrieved from: <u>http://www.greatbuildings.com</u>.
- 91. Tai Mahal (2005).Encarta Encyclopedia, Retrieved from http://en.wikipedia.org/wiki/File:Mumtaz_Mahal.jpg; http://www.delhi-tourismindia.com/tours/taj tiger.htm; http://en.wikipedia.org/wiki/File:tajPlanMughalGardens.jpg; http://en.wikipedia.org/wiki/File:TajMosque.jpg; http://en,wikipedia.org/wiki/File:Taj-12.jpg; http://en.wikipedia.org/wiki/File:Taj-08.jpg; http://en.wikipedia.org/wiki/File:Entrance fort.JPG: http://en.wikipedia.org/wiki/File:TajEntryArch.jpg; http://en.wikipedia.org/wiki/File:TajMahalinMarch2004.jpg: http://en.wikipedia.org/wiki/File:TajCenotaphs3.jpg; http://en.wikipedia.org/wiki/File:TajJoli1.jpg; http://en.wikipedia.org/wiki/File:Taj Mahal finial-1.jpg; http://en.wikipedia.org/wiki/File:TajAndMinaret.jpg; http://en.wikipedia.org/wiki/File:Taj_Decorations.jpg; http://en.wikipedia.org/wiki/File:TajPlan.jpg; http://www.wikipedia.org/free/encyclopedia/tajmahal; http://www.pbs.org/treasuresoftheworld/taj_mahal/tlevel_2/t3build_design.html; http://en.wikipedia.org/wiki/origins_and_architecture_of_the_Taj_Mahal; http://en.wikipedia.org/wiki/Taj Mahal.
- 92. The Igbo People (2006-2010). Retrieved from <u>http://www.cometonigeria.com</u>.
- 93. Triumphal Arch (2009). Retrieved from <u>http://www.paris.org/monument/arc</u>.