

Shapes And Aesthetic Perception: A Case Study Of University Of Lagos Senate Building Façade

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Abstract: Basic shapes have been known to convey different meanings in art and architecture. Diverse studies on building shapes include its influence on energy efficiency, construction cost and life cycle cost among others. However, shape as an aesthetic element has little empirical study on record in relation to its acceptability for aesthetic appreciation. In testing the influence of shapes on aesthetic perception, university of Lagos senate building façade was considered. The aim of this research was to investigate the effect of shape in relation to other aesthetic elements on aesthetic perception by users for future application in architectural education and practice. A combination of the survey and case study research designs was adopted with the stratified random sampling technique used in selecting respondents. Primary data were obtained through the administration of questionnaire to 577 users from ten selected universities. Picture of university of Lagos senate building façade was attached to the questionnaire to serve as basis for assessing the façade. The quantitative data were analysed using frequencies, percentages and mean ranking. Façade shape was considered very important in the aesthetic perception of an administrative building. The study implies the need for training and re-training of architects on the psychology of shapes on a building façade conceptualization. This in essence will enhance the visual quality of the administrative building and ultimately a tool for nation building

Index Terms: Aesthetics, Façade, Perception, Shapes.

1 INTRODUCTION

Shapes are significant in everyday life and the foundation for the comprehension of the natural and built environment. Church (2014) described shape as one of the most noticeable attributes of the world around us and also one of the major ways the human brain categorizes everything around us even when we are unconscious of it. In the world of art and architecture, irrespective of the sophistication of the design, the meaning of shapes and their visual impact on the users mind is a vital tool for the experts' success in designing. All through history, basic shapes have being the foundation of architectural edifice. In the ancient world, architecture was symbolic and includes the geometrical shapes such as triangle and the rectangles as adopted in the Pyramids in Giza, Egypt which evolved into a purely geometric pyramid, with four triangular sides slanting inward from a square base. The Circle can be seen in the view of the Pantheon's ceiling in Rome, Italy, while the Octagons is seen in the San Vitale church in Italy. The interior space of the church is basically circular, while the exterior is octagonal. In the modern world, Canadian architect Frank Gehry designed buildings with radically different organic shapes. His Guggenheim Museum in Bilbao, Spain, for example, suggests fish shapes and scales (Zappia, 2017).

The facades of senate building of the University of Lagos shows an interesting combination of shapes as an administrative building. The University of Lagos is a federal government owned institution that was established in the year 1962 located in Akoka, Lagos State.

Outstanding among the numerous structures in this citadel of learning is the University Senate House, which stands at fourteen-storey high. This asymmetrically configured structure was designed in the year 1980 by James Cubitt Architects and construction was completed in 1985 by main contractors, Soleh Boneh. This edifice has its flat roofs on split levels as seen in Plate 1 to ... with a good show of balance and simple form combination. The basic shape most visible on the façade is a combination of rectangles. The architects diversified the shape by using different heights and by projecting a semi-cylindrical form from the approach elevation. A post and lintel system of construction allows pedestrian movement through the building on the ground floor, rather than diverting them around the building. The building is covered with heavy, deep, shading devices reducing the need for air-conditioning. Its mosaic clad louvres made of pre-cast concrete which covers the entire façade were constructed with in-situ sprayed render on steel mesh, on reinforcing bars (concrete egg-crates). The entire façade is finished with mosaic tiles of four distinct colours of cream, white, black and brown.



Plate 1



Plate 2

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Plate 3 (Plate 1-3: Approach, Left and Rear Views of University of Lagos Senate Building)

2 LITERATURE REVIEW

2.1 Shape

Shape can be related to every substance in existence as they are everywhere and all objects have shape. It is lexically defined by Collins online dictionary (2019) as an object, a person, or an area in the appearance of their outside edges or surfaces, for example whether they are round, square, curved, or fat. It is also a specific form, a particular condition, the outline of something you can see even when you cannot clearly make out what it is. Esaak (2019) defines a shape as an enclosed space with bounded two-dimensional form that has both length and width used as the building blocks that artists use to create images on canvas and in our minds. As one of the seven elements of art, the boundaries of shapes are defined by other elements of art such as lines, values, colours, and textures; and by adding value you can turn a shape into an illusion of its three-dimensional form. Fussell (2013) also supports a shape as a two-dimensional area that is defined by a change in value or some other form of contrast. Uji (1994) describes shape as the principal characteristic of form which results from the specific configuration of a form's surfaces and edges; the edge of a plane, or the silhouette of a volume. Shapes according to Arhipova (nd) are very important elements in all design directions as they serve as components of a visual composition as well as a content organising tool which divides or connects design elements into groups. Architeacher (2002) posits that shape is made when a line is closed and space is enclosed which could be either two dimensional or three dimensional. A two dimensional shape is one that is drawn on a flat surface such as paper. A three-dimensional shape is one that takes up real space. Architectural drawings often try to indicate what the proposed building will look like as a three-dimensional form by the use of perspective. Arhipova (nd) describes shape as the basic unit of analysis of all visual objects. For example, a house can be perceived as a rectangle with a triangle on top while the sun can be presented like a circle. Shapes have great impact on human consciousness and behaviour even when they are not noticed. Every shape has its own meaning and influences the mind and subsequent reactions diversely. Like line, shape has many personalities such as rigid, flexible, precise, uncertain, calm, active, awkward or graceful (Agoba, 2008). Shapes can also be described as equal sided shapes or unequal sided shapes. Equal sided shapes include: Square, circle, equilateral triangle, pentagon, hexagon, octagon, diamond, marquis, ogive and star, while unequal sided shapes are oval,

scalene and isosceles triangle, rectangle, parallelogram, trapezoid, heart, teardrop, paisley, club, spade, pear, kidney among others. Table 1 describes some basic shapes and their meaning. Fussell (2013) emphasises that shapes are characteristically two-dimensional having only length and width and can be categorised into two groups namely geometric shapes or organic shapes. Geometric shapes (Figure 1) are also known as regular shapes and are easy to recognize. The subject of mathematics can be used to find information about these shapes and these shapes generally have a specific name associated with them. Examples include: circle, triangle, rectangle, square, trapezoid, pentagon, hexagon and octagon. Organic shapes also referred to as free-form shapes are shapes that seem to follow no rules as shown in Figure 2. Organic shapes generally do not have a name associated with them and are typically not man-made. Understanding to see and recognise the world around us in shapes helps in sharpening the designing and drawing instinct of an artist or architect. No matter how simple or complex an object which could be a human form or a building may look, it is composed of isolated basic geometric or organic shapes. Fussell (2013) further describes shape as either positive or negative. Positive shapes are shapes defined by objects as shown in Figure 3, while negative shapes are shapes defined around an object as shown in Figure 3. Every object in the built and natural environment is a combination of basic shapes (Figure 4).

2.2 Final Stage



Figure 1: Geometric Shapes (Fussell, 2013)

For papers accepted for publication, it is essential that the electronic version of the manuscript and artwork match the hardcopy exactly! The quality and accu



Figure 2: Organic Shapes (Fussell, 2013)

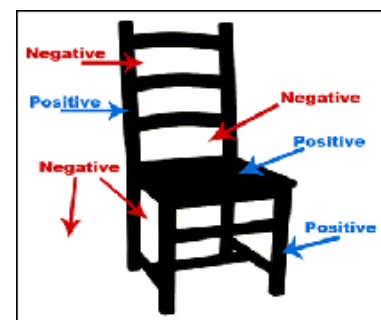


Figure 3: Positive Shape and Negative Shapes (Fussell, 2013)

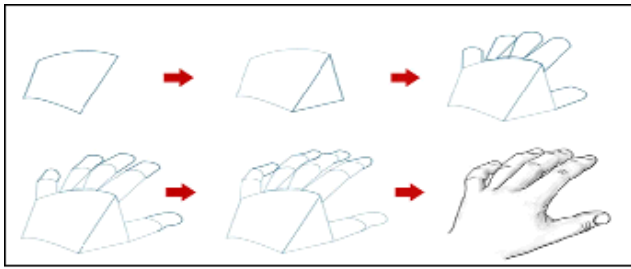


Figure 4: Combination of basic Shape (Fussell, 2013)

Table 1: Shapes and their meaning

Shapes	Description	Meaning
01 Square	They are the most common shapes used. Consists of Straight lines and right angles.	Discipline, strength, courage, security, reliability, Stable and confident
02 Rectangle	Strongly associated with buildings.	
03 Triangle	An energetic and dynamic shape associated with motion and direction. The lines are placed that way so our eyes automatically move to the top of a triangle or in the direction it is placed.	Upright triangle brings the feelings of stability and balance but the reverse looks risky and ready to fall (tense feeling) Conveys excitement, Less stable but more dynamic
04 Circle (Oval, Ellipses)	Continuous line that has no beginning or end. They have no angles so it makes them softer and milder.	Conveys eternity, female, universe, magic and mystery
05 Spirals	These includes shells and some flowers in nature.	Represents knowledge or information. Growth, creativity, calmness and intelligence.
06 Natural Shapes	Objects in nature have their unique shape. Both living and non-living things	Natural shapes have clear meanings. For example, a rose flower symbolises love and passion; a lion symbolises pride and bravery.
07 Abstract Shapes	These are symbols of abstract ideas or simplified versions of natural shapes. They can have direct and figurative meanings. They are an effective way to transfer a message quickly without text as in logos and icons.	They represent duality of meaning, uniqueness and elaborate.

Source: Adapted from Arhipova (nd)

2.2 Aesthetics

Aesthetics according to Nia & Atun (2015) is a discipline which focuses on the study of beauty and attributes of an object based on human perception. Aesthetic evaluation in architecture involves identifying and evaluation of the façade or view of the building as an artistic work of painting by

breaking them down into aesthetic elements for easy comprehension (Ching, 2015; Liu and Chuang, 2014; Ak, 2013; Benzu, 2010; Gjerde, 2008). Aesthetic elements for visual quality assessment have been identified by diverse authors to include: Ratio and scale, shape and format, complexity, style, order, spatial perception, texture, shadow and lighting, and marvel and originality (Liu and Chuang, 2014); unity, proportion, scale, balance, symmetry and rhythm (Benzu, 2010). Architeacher (2002) with a broader classification identified aesthetics as the sensory elements, formal elements, technical elements and expressive elements of objects. The sensory elements are the basic integral aesthetic elements which directly communicate with our senses and they include line, shape, texture, colour, light and darkness, and space. The formal elements which are a combination of sensory elements for better interpretation to the human mind are: Patterns and repetition, Rhythm: Symmetry /Asymmetry Balance, Contrast: Proportion/scale and sizes of rooms, Theme and Variation, Coherence and Unity in Variety. The Technical Elements includes: Creative skill of architect or designer, Technical skill of the designer, Craftsmanship of the builder, Use and properties of materials, Quality of execution as well as other historical information such as the name of architect, the period in which the structure was built, the design style, cultural faces of the period and available technology. The expressive elements deal with the overall impression a piece of art relays to the sense of an observer. That is, the mood or metaphoric statement expressed by an architectural piece. All other aesthetic elements such as the sensory, formal and technical elements come together to give a mood, character and emotion to buildings.

3 METHODOLOGY

In order to examine respondents' perceptions of the elements considered relevant in assessing a university senate building façade, fourteen elements were considered based on the review of Broudy Aesthetic Model sensory elements by direct observation of the senate building façade photographs. These includes height, façade colour, texture, shape, fenestrations, columns, foreground, roof shape and/or parapet wall at roof level, entrance canopy/design, terraces/balconies, railings, screen walls, services, and inscription. This study used closed ended questionnaire for the collection of quantitative data. The set questions were based on the 5 point likert scale matrix of not at all, a little, un-decided, to some extent and to a large extent to generate numeric values for these elements. The questionnaires were distributed to students and staff of 10 universities in southwest Nigeria using the stratified random sampling. A total of 788 questionnaires were distributed and 73% or 577 were subsequently analysed. Data analysis was done using SPSS Version 20.

4 RESULT AND DISCUSSION

Table 2 presents respondents' profile. It is evident from Table 2 that most of them were between the age group of 21 and 30 years, predominantly male and single. The result also shows that majority of the respondents were students, with the largest number having their bachelor's degree. Majority of respondents' earn below N150,000.00. A summary of the scoring is shown in Table 3. The lowest scored sensory elements identified by respondents for a university senate building assessment as presented on Table 3 are railings,

services, terrace/balconies with mean scores of 3.15, 3.31 and 3.33, respectively. Elements considered most important by respondents are facade shape, colour and height with mean scores of 4.27, 4.18 and 4.16 respectively. Other elements with relatively high mean score above 4.00 as presented in Table 3 are foreground and fenestrations. The mean scores and the ranking implies that the respondents identified the higher means scored elements to be more important in the assessment of a university senate building façade as an administrative building. Facade shape as the most preferred feature considered by respondents in aesthetic judgement of the university of Lagos senate building can be described as a combination of rectangular and square asymmetrical shapes with vertical orientation. Primarily, though the images are a combination of basic recognisable shapes, the most dominant defining shape on the facades were observed to be the rectangular shape. The rectangular shape preferred conforms to earlier description of shapes and psychological meaning by Arhipova (nd) that suggests rectangles to symbolise discipline, strength, courage, security, reliability, stability and confidence. The orientation indicates the longer side which is either the length or height of the building. The most preferred by the respondents were the vertical orientation which indicates or corresponds with the height preference irrespective of whether they are symmetrical or asymmetrical. Shape as the most preferred images is in line with a similar study on influence of building façade visual elements on historical image in Kuala Lumpur city, Malaysia by Askari & Soltani (2018). Their study rated shape of building frontage second, next to architectural style of building frontage in a list of seven elements by respondents.

Table 2: Socio-Economic Characteristics of Respondent

Attributes	Frequency (n=577)	Percentage (%)	
Age Group			
20 years and below	87	15.1	
21-30 years	255		44.2
31-40 years	67		11.6
41-50 years	88		15.3
51 years above	80		13.9
Gender			
Male	337		58.4
Female	240		41.6
Marital Status			
Single	304		52.7
Married	257		44.5
Divorced	16	2.8	
Status in University			
Staff	205		35.5
Student	372		64.5
Academic Qualification			
SSCE	201		34.8
OND	57	9.9	
B.Sc	244		42.3
Masters	60		10.4
Ph.D.	15		2.6
Income			
less than N50,000	133	23.1	
N50, 000-N99, 999	159		27.6
N100, 000-N149, 999	144	24.9	
N150, 000-N199, 999	54	9.4	
N200, 000 and above	87		15

Table 3: Descriptive Statistics of Architectural Element Identification by Respondents

Elements	Mean Score	Rank
1 Building Shape	4.27	1 st
2 Façade Colour	4.18	2 th
3 Building Height	4.16	3 th
4 Foreground	4.01	4 th
5 Fenestrations	4.00	5 th
6 Texture	3.83	6 th
7 Entrance Design	3.79	7 th
8 Columns	3.65	8 th
9 Roof shape and/or Parapet wall at roof level	3.63	9 th
10 Screen Walls	3.50	10 th
11 Inscriptions	3.38	11 th
12 Terraces/Balconies	3.33	12 th
13 Services (Ducts, outdoor AC units, pipes)	3.31	13 th
14 Railings	3.15	14 th

5 CONCLUSION

The combination of simple shapes such as square and rectangles is recommended for the façade conceptualisation of administrative buildings as they symbolise discipline, strength, courage, security, reliability, stability and confidence. However, a balanced vertical orientation of the shape with a higher height to width ratio is best. The balance of the structure could be either symmetrical or asymmetrical. This implies training and re-training of architects on the psychology of architectural design elements on a building façade, and encouraging further research in aesthetic perception of facades of diverse building types.

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