

Essential Elements of Spatial Definition in Theatre Architecture

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Abstract

This study on “Essential Elements of Spatial Definition in Theatre Architecture” examines space as a vital element of design used in architecture for both aesthetic and practical purposes. Every structure is built in space, and the use of interior and exterior space in architecture is determined by the function for which a building is meant. In theatre architecture, space is broken down into functional areas to serve direct and allied needs of theatre performers and audience members. This paper assesses the nature and character of the different spaces created in the theatre house and the functions they serve. It examines the effects of architectural materials, features and space plan on the acoustic shaping of the theatre auditorium. The paper adopts the architectural mantra “form follows function”, submitting that the appropriateness of a theatre house in terms of serving its practical and aesthetic functions is dependent on architectural space management.

Keywords: Spatial definition, Theatre architecture

1. Introduction

Of all the elements of artistic expression, space is the most fundamental primarily because all forms of visual arts exist in space. Painting, graphics and textiles exist in two –dimensional space, consisting of length and breadth dimensions, while sculpture, ceramics and architecture exist in three-dimensional space, consisting of length, breadth and height. The arts of the theatre, ranging from its architecture to the various stage crafts and performances utilize both two and three-dimensional space. An interesting quality of three-dimensional space is the possibility for exploration in the round, which brings to mind a vital relationship existing between space, time and movement. One can only appreciate art in the round either by setting the art piece in a kinetic state or by moving around it, and the element of time is vital in movement. Both time and movement exist in conjunction with space.

The overall primacy of space for art, the artist, and the audience is the impetus for this discussion. To be able to fully understand and appreciate this relationship, a particular space environment has been isolated. The theatre house has been singled out as a suitable environment within which space can be created and utilized for artistic performances. This paper is therefore set to discuss the concepts of space and its manipulation in architecture towards creating an aesthetically and practically suitable environment for the interaction between arts, artistic ideas and the audience. The paper discusses essential elements in the definition of space for theatre activities. It examines the general concept of space, architectural models, principles, acoustics and the relationship between these principles and functional theatre spaces.

2. The Concept of Space in Theatre Architecture

The Aristotelian definition of space adequately captures the nature of space as an element of design. Aristotle defines space as a container of things. Vague as it may seem, this definition encompasses the character of space for design creation and utilization. Meiss (1994) deliberates on the implications of space as container: “Space is...of necessity a hollow, limited externally and filled up internally. There is no empty Space; everything has its position, its location and its place” (p.101).

The hollow space as a container is the element that the architectural designer converts into a functional structure to serve a specific purpose. The responsibility of the theatre architect, therefore, is to demarcate and develop both interior and exterior space areas in order to contain and to express in it, and to give it a meaningful form in which performers and audience can interact. The theatre architectural designer uses both two and three-dimensional space in interior and exterior designs to satisfy the physical and mental needs of performers and audience members. All space areas must relate towards fulfilling the needs of the various users.

Interestingly, the debate on space use in architecture developed at the beginning of the nineteenth century with German philosopher August Schmarsow who proposed in his work *Philosophie der Kunst* that “spatial intention is the living soul of architectural creation”. He had argued earlier on that:

All static or mechanical disposition, as well as the materialization of the spatial envelope, are only means for realizing an idea, which is vaguely felt or clearly imagined in architectural creation... Architecture is art when the design of space clearly takes precedence over the design of object (Meiss, 1994, p. 101).

From this premises, the place of space in architecture becomes clearly established. Space is that

convertible element which gives character to a structure. This character could be reflected in theatre architecture in three ways: First, every space unit in theatre architecture should be related to each other in a contiguous sense. Space areas in a theatre house maintain fluid relationship with each other. The theatre building is essentially a spatial composition for practical and aesthetic functions. Secondly, the visual character and the profile of a theatre building should give a clue to its functions. Stage art by its nature is partly about chain relationships of forms in space as expressed by the various designers. And finally, the space surrounding a theatre building should be related to the building in terms of size, structure and functions. At this point, it is pertinent to examine the elements that help define space in theatre structures.

3. Elements of Spatial Definition

Line, shape, form, texture, colour and space are vital elements of design that apply to all the visual arts. They are usually applied following set principles to make meaning. Space is crucial as all other elements exist in and relate with it. In defining space for theatre architecture, line relates with space to create a definite linear character, which could be horizontal, vertical or oblique. A building is horizontal if it stretches in length on the surface upon which it is built. On the other hand, a building is vertical if the skyward thrust (height) is more than its length or breath, like the skyscraper or tower. A building is hardly oblique since such would be susceptible to gravitational pull, which could result in disaster. One of the few recorded cases of oblique buildings was the leaning tower of Piza in Italy, which was actually one of the wonders of the ancient world. There are certain cases where structures follow a slanted formation like a raked auditorium or a staircase. In such cases, there is always a vertical or horizontal support to ensure stability.

Another element that helps define space is shape, which could be classified as circular, triangular, square, pentagonal, among others. It is common to define or describe space in terms of its shape. The practice of using shape for spatial definition started early in history. From the Middle Ages through the Renaissance to the early 20th century, theories of architectural aesthetics used Greek antiquity as a parameter with which any new design was to be compared. The classical treatises according to Meiss (1994) have three obsessions: the taxis or geometrical order, the genera or code for set of elements and the symmetry or rhythm and proportions, which regulate the relationship of parts to the whole (p.7). Of all three, the geometrical order, which actually refers to shape as an element of spatial indication, was the most popular. This provided the model or typology of elements upon which an architectural framework was built. Form is actually extension of shape. From the basic shape, a form can be built. Square gives cube, circle translates to sphere and triangle develops into pyramid. These provide the architectural formworks into which units like the window, door, projections and indentations are fit for various purposes.

Texture is another element that helps define space. It usually refers to surface quality. Texture adds character to space and its tactile quality elicits an urge to touch. Oftentimes, it has to do with finishing, which could be actual or visual. Both types of texture help determine reactions towards space. At a distance, fine texture could appear smooth while at a close range sparse texture could become patterns or independent forms themselves.

Colour is another element of spatial definition whose role is extremely subjective. Colour psychology, built around cultural norms and traditions helps determine effects on architectural space. The advancing and receding colour phenomenon proposed by Gilbert and Macarter (1988) maintains that warm colours advance while cool colours recede. Dark colours compress, while light colours expand, at least by illusion. A simple experiment to determine the effect of colour in space is to paint two rooms of the same size with different colours, one dark and the other white. The popular response is usually that the white room gives an illusion of space, while the reverse is the case with the dark coloured room. The impact of colour as an element of spatial definition in architecture may not be a physical experience, but the psychology is so strong that it cannot be overlooked.

In all, architecture is interaction of form with space. This interaction creates a character, which is peculiar to every building. The function of a building determines the structure and to an extent the outlook. This is why a stadium is different from a shopping plaza and a residence different from a theatre building. How then can forms interact to form a structure for an ideal theatre house? What vital spaces must be created to meet the multiple demands for functional spaces in a theatre house?

4. Functional Theatre Spaces

The proscenium, the arena and the thrust are the three major architectural formations for purpose-built theatres. All provide the audience with a different experience. Generally, in configuring a theatre house of any formation, certain space areas must be created. By those spaces and the relationship between them, one can determine the appropriateness of a theatre house in terms of carrying out its functions. According to Enendu (2002) "The architectural characteristics and structures of a theatre building are relevant phenomena to theatrical practice and design" (p.349). The architectural formwork must be so crafted like an operational plant to enable logical space

relationships and to enhance smooth performances. In a theatre plant there must be an auditorium, a stage and backstage work areas (Brockett, 1992, p. 590). All other spaces enhance the functioning of the three.

Brockett goes further to list in-built architectural facilities designed for the audience to include the box office, lobby, coat-check rooms, rest rooms, corridors entrances, exits and refreshment stands. Others include balconies and the foyer. Since the auditorium is the most vital feature for the audience, it must be architecturally conditioned for seeing and hearing at optimal levels. The placements of architectural features like the roof, ceiling, floor, ventilation outlets and others features in a purpose-built theatre must enhance visibility and audibility as well as a fair level of comfort. For instance, the floor should be raked to avoid blockage of vision and the ceiling high and slanted for proper acoustics.

The entrances and exits should be wide in relationship to the size of the auditorium. They should be strategically placed for emergency response. Ideally, the windows should be raised to conceal in-house activities from unauthorized external view. High level windows are also good ventilators. The steps should be broad with the right tensile strength to support and accommodate numerous audience members, particularly during rush periods. The foyer should be large enough to accommodate audience members waiting to be ushered into the auditorium. The walls and floor should be padded to reduce reverberation and for other acoustic effects. Several other architectural formations and installations could be adopted.

The architectural designer should also be conscious of the performance area. The stage being the centrepiece could be raised or lowered, depending on the type of theatre. The stages of most proscenium theatres are raised. They also have a high loft to hold flying scenery units. In addition, they have proscenium openings with adjustment devices (Teasers and Tormentor), stage wings, apron and traps, all of which are parts of stage architecture. Backstage, there are changing rooms for different sexes, green rooms, conveniences, stage manager's booth, loading bay and backstage doors. The placement of each of these features depends again on the type of theatre. Quite often, the control room is located behind the house for easy monitoring and enhancement of the activities on stage. At various points above the auditorium, on the side walls, and on the stage itself, provisions are made for lighting rigs. In contemporary architecture, electronic cables are laid in conduits for fittings and appliances. Similarly, co-axial cables are laid in conduits for communication and visual gadgets such as telephones, intercom, projector, security monitors and television screens.

Finally, a work area should be provided ideally behind the stage for smooth movement of theatre designer, scenery pieces and props from the workshop to the stage. Parker, Wolf and Block (2003) opine that the size of the work area should be determined by "the size of the stage the shop is to serve; the location of the shop in relation to the stage and storage areas; the number and kinds of productions to be produced in an average season; and the nature of the shop's working procedure and personnel" (p.109). The architectural features include the loading bay, the scene shop for scenery and props, replete with storage facilities. A costume room with laundry, dyeing, cleaning and pressing facilities is also necessary. There should be storage areas for lighting equipment, make-up rooms, rehearsal rooms and possibly an office for supervisory personnel. Even though the demand for specific architectural spaces for a theatre environment may be high, the functional spaces make a theatre suitable as an environment for both performers and audience members. And the challenge of the designer in any theatrical setting is always to make a connection between the space, the performer and the audience (Hall and Burnett, 2002, p. 5).

Outside the theatre building, space should be provided to enhance the functions of the building. In clear terms, space should be demarcated for driveways, lawns, pedestrian walkways and parking lots. Landscaping also takes care of the distribution of plants (trees) for aesthetics and for wind and erosion control. The size of the parking lot is dependent both on the space available and on the size of the auditorium. A large auditorium should ideally have a large parking space considering that the ratio of vehicle owners in a large audience will be higher than a small one. It is a common architectural blunder to find large buildings with little or no parking space. Architects who are conscious of parking needs sometimes device solutions such as creating a parking lot on the ground or the first floor. Some even go underground. Proper management of exterior space enhances the architectural value of the complex. Designers of theatre houses are generally challenged not only to create functional indoor and outdoor spaces, but to be conscious of aesthetic standards and the need for safety and comfort.

5. Space and Theatre Acoustics

Apart from clear spatial demarcations to serve movement of performers and audiences, it is also essential to manage architectural space for effective movement of sound to avoid reverberation or echo in the theatre auditorium. In understanding the principles of acoustics or the science of sound, an analogy could be made comparing outdoor sound with indoor sound. Outdoor sound diminishes quickly with distance, but indoor, direct sound is enhanced by reflections from hard surfaces surrounding the interior space – ceiling, walls and floor. Therefore, the shaping and finishing of these surfaces are essential to sound control. Schuette and Kirkegaard (2006) theorize scientifically thus: "The acoustic intimacy of a space is highly based on the direct sound and the

first reflections” (p.89). While it is ideal to control sound in a theatre auditorium, it is not necessary to eliminate it totally for the sake of performance. In other words, a little reverberation is good for the theatre auditorium otherwise sound productions would become feeble, no matter the level of projection. It is cautioned that while reverberation gives fullness to sound and is a desired component of theatre auditorium, “its length and level must be appropriate to the performance type” (Schuette & Kirkegaard, 2006, p. 93).

A few architectural facts must be emphasized as follows: space use and the visual character of ceilings, walls and floor have a significant impact on acoustic shaping. The challenge for the architect is to use materials that can delay reflections that could become distracting echoes. For ceilings, sound absorbent materials such as particle boards and woolen materials could be used. If the ceiling is high, acoustic bafflers could be suspended to absorb sound mid-air. Bafflers could be designed to take any aesthetic form, but they are always made of sound absorbent materials and usually hung from an anchor in the ceiling. For the floor and installations, Jaffe (2006) suggests heavy upholstery on audience seats, floor carpets with padding and totally absorptive rear and side walls (p.123). By so doing, sound could be regulated to meet the acoustic criteria for a given performance venue. Sounding a general note of caution, Schuette and Kirkegaard (2006) suggest that every architectural project has its own peculiarities – circumstances, opportunities, and constraint; so the designer must apply the principles of acoustic design according to the circumstance. They offer the following checklist with regards to theatre auditoriums:

- Clarity of voice, musical instruments and amplified sound for the audience, and ease of projection and communication for the performance coming from good sight lines, proper shaping of wall and ceilings surfaces, appropriate use of sound- absorbptive materials, room response that provide feedback to performance and quiet background noise.
- Fullness of sound provided by appropriate volume.
- Variability of the acoustic environment as needed.
- Construction materials that sustain full frequency sound energy and provide isolation from the exterior (p.112-113).

Acoustics may involve delicate sound balancing using the suggested techniques and materials, but the ultimate accomplishment of the acoustician should be to provide regulated and functional audio signals within the theatre auditorium.

5. Conclusion

Space is an integral design element that is useful to all designers, including architectural designers. The demarcation and use of space within a building qualify the functions of the building. For a building to qualify as a theatre house, it must accommodate certain space areas, which must address both functional and aesthetic needs. A theatre building may spring from a simple or a complex architectural model, and may meet conventional principles of design, but beyond the block work, it must indicate the function for which it was made. It must provide the right environment for interaction between the various arts of the theatre, the performers and the audiences. Therein lies the challenge for the theatre architect who in applying the essential elements of spatial definition discussed here must work with the theatre designer, the theatre administrator, the performer and other users of the theatre towards realizing this aim.

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