

SEQUENTIAL EXPERIENCE OF SPACES THROUGH MULTI-SENSORY APPROACH IN DESIGN: A CASE STUDY OF AN INDIAN TEMPLE

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Abstract

The purpose of visiting a temple is to gain the positive energy and feel refreshed, through an exchange of emotions and association with the spaces there, for which, the space needs to be personalized. To understand and experience a space, one must perceive information, from the surrounding and interpret it for a better understanding of the environment. The spaces in a Hindu temple are the best examples with a multi-sensory approach, which can potentially nourish both emotional and spiritual needs, but it has to be experienced with proper sequential perception. The study is trying to understand how to perceive a space in temples sequentially, through multi-sensory approach.

To study the same, the methodology adopted is identification of a temple and visiting and experiencing the same. The temple identified is Brihadeeswarar Temple, Tanjaore, Tamil Nadu, India; as it is a fine example of Dravidian temple architecture during its peak, and the most ambitious structural temple with a very different ambience altogether. The study will be focusing on how a space is perceived, do all senses respond to that one particular space, and why is it so. Contemporary architecture is having an ocular centric paradigm. An architectural work is not to be experienced as a series of isolated retinal pictures, but in its fully integral material, embodied and spiritual essence. This aspect is emphasized through the study, and also the involvement of all senses in space perception was hence purposeful, and an important aspect in temple design. The study may conclude with how senses help in connecting spaces directly between the individual and the surrounding, making it a sanctified approach.

Keywords: *Multi-sensory, Space Perception, Sequential Experience, Indian Temples*

1. Introduction

Architecture communicates through spatial tools, at three levels -sensorial, experiential and associational. Perceiving architecture (art) emotionally, i.e. relating oneself with space and time, needs the support of senses, as senses helps to perceive information from the surroundings. Sight, hearing, smell and touch are the sensory modalities that play a dominating role in spatial perception in humans, i.e. the ability to recognise the geometrical structure of the surrounding environment, awareness of self-location in surrounding space and determining in terms of depth and directions and the location of nearby objects. Touch, smell and taste provides information on the so called 'near space' (termed also haptic space), whereas vision and hearing (sociable senses) are capable of yielding percept, representing objects or events in the so called 'far space'. Occupancy of building is truly felt when designing of a building makes an individual move through a space while experiencing through senses. So, architecture cannot be isolated from its association with senses and results in a wonderful feel of belonging, which creates an affection and movement.



Figure 1, Senses perceiving spaces

Indian aesthetics search for beauty in every creation of nature and every art thus created have some in-depth meaning to disclose through symbolism. Beauty is enjoyed through all five sense organs, which contribute joy to life, as they perceive the impulses from surroundings and carry it to the brain. Hence

multi-sensory approach towards beauty is reflected in all art forms including architecture. The spaces in a Hindu temple are the best examples with a multi-sensory approach, which can potentially nourish emotional and spiritual needs, but it has to be experienced with proper perception. Symbolically, temples are having a multi-sensory approach, in rituals, in the form of offerings - panchopacharaas to God, the offerings namely *Gandha* (sandal), *Pushpa* (flowers), *Dhoopa* (incense), *Deepa* (lamps) and *Neivadya* (food) which symbolises that our senses and their stimuli are reverentially offered to the Paramatma, and we shall not be inclined to misuse these sense organs⁽¹⁾.

2. Multi-Sensory Perception of Spaces

Juhani Pallasmaa, in his book 'The Eyes of the Skin' describes, "instead of creating mere objects of visual seduction, architecture like every meaningful art, relates, mediates and projects meanings that directs our consciousness back to the world and towards our own sense of self and being"⁽⁵⁾. The isolation of eye outside its natural interaction with other sense modalities, and elimination and suppression of other senses results in the ocular-centric paradigm forgetting the inner meanings. To avoid such ignorance, a multi-sensory approach to understand the concept of spatial manifestation was prevailing from earlier times in Indian Architecture.

2.1 VISUAL PERCEPTION THROUGH LIGHT AND SHADOW

The eye is the organ of distance and separation, also it surveys, controls and investigates that which it perceives. Eye tries to touch the shapes, contours, profiles, textures and colours of nearby as well as far away objects, to communicate the quality of the surrounding to the brain. Eyes are able to perceive this due to the presence and absence of light.

Light, both natural and artificial, contributes to the character and ambience of a space and manipulates design to identify places. This occurs with varying light intensity as soft even light, strong brightness, sharp shadows, constantly changing intensity and darkness⁽⁴⁾. Deep shadows and darkness are also essential along with light, because they dim the sharpness of vision, make depth and distance ambiguous, and invite unconscious peripheral vision and tactile fantasy⁽⁵⁾.

2.2 AUDITORY PERCEPTION THROUGH INTIMACY AND TRANQUILITY

Sound is omni-directional and creates an experience of interiority. When eye reaches and isolates objects, sound tries to receive and incorporate it. Spaces never respond to gaze, but it always refracts sound to connect and bring affinity in us. The space accommodates the perceiver and he can feel the response of a space when being intimate and silent. The most essential auditory experience created by architecture is tranquility⁽⁵⁾. Architecture presents the drama of construction silenced into matter, space and light. An architectural experience silence all external noise, it focuses attention on one's very existence. Architecture, like all art, makes us aware of our fundamental solitude. Architecture detaches us from the present and allows us to experience the slow, firm flow of time and tradition⁽⁵⁾.

2.3 OLFACTORY PERCEPTION THROUGH MEMORY & IMAGINATION

The most persistent memory of any space is often its smell⁽⁵⁾. The odour of a space remains the remembering character of it and the perceiver tries to imagine the space from the memory. A particular smell makes us unknowingly re-enter a space completely forgotten by the retinal memory. The retinal images of contemporary architecture certainly appear sterile and lifeless when compared with the emotional and associative power of olfactory imagery. Smell could be the natural result of chance and purpose, but sometimes it may be intentional with the use of materials. It could stimulate emotions, guide or distract the perceiver.

2.4 GUSTATORY PERCEPTION THROUGH INTRICACY AND DETAILING

Vision becomes transferred to taste as well: certain colours and delicate details evoke oral sensations⁽⁵⁾. Tactile and taste experience has a subtle transference being felt through intricacy and detailing. Colour, texture and finishing of those details present themselves to the appreciation of the tongue. The sensuous materials, colours and skillfully drafted details evoke oral experiences in the perceiver. The details are

not to be assessed as mere decorations, but helps in understanding whole of which they are inherent part. Details try to express belonging or separation, tension or lightness, friction, solidity, fragility etc.

2.5 HAPTIC PERCEPTION THROUGH PROFILES AND TEXTURES

Every touching experience of architecture is multi-sensory, qualities of matter, space, scale are measured equally by eye, ear, nose, skin, tongue, skeleton and muscle. Feeling the profile and texture by touch is the unconscious of vision that provides three dimensional information of the materials and spaces. The skin reads the texture, weight, density and temperature of matter.

3. Space as an Entity

The Upanishads describe space as an entity in which creation in its endless variety of forms takes place. Space is conceived as *bindhu* - the fundamental point from which all forms emerge which is complete in its own⁽²⁾. Space exist, but is conceived as emptiness, in mind and then physically, thus having a potential to hold infinite things⁽²⁾, a container and a content. Hence space is not only perceptual, but also experiential i.e., it is not only an object of reasoning or demonstrable knowledge, but a pure experience. Indian architecture has contributed to the creation of sequential experiencing in spaces, where one space merges with another by overlapping uses and interconnections which generate flexibility⁽²⁾. To have this sequential experiencing of spaces, multi-sensory perception plays an important role⁽²⁾. It offers more than the eye can perceive in one frame and more than the mind can experience in one instant. Sequential experience of space is conceived and perceived on the basis of movement through it. Spatial qualities are observed under various categories as context, construct, realms, threshold, kinesthetic and notions⁽³⁾.

4. Space perception through senses

- a case study of Brihadeeswarar Temple, Thanjavur, Tamil Nadu, India

The study tries to inculcate the various parameters of space perception with multi-sensory perception, by analysing Brihadeeswarar Temple, Thanjavur.

4.1. THE CONTEXT OF BRIHADEESWARAR TEMPLE:

The temple stands as a testimony to the Chola power in both economic and military stand. This temple admirably reflects the prosperity, indeed opulence and pays a tribute to the victory. Temple complex has been decided to be the focus of the town, and further developments were concentric to it. It is a fine example of Dravidian temple architecture during its peak, and the most ambitious structural temple with massiveness and rigidity being the prominent features. Dedicated to God Shiva, the temple has 4 divisions - enclosure with gopurams, open courts, attached and detached mandapas and sanctum with shikhara. An axial and symmetrical geometry rules the temple layout, with exceptions in the subsidiary shrines.

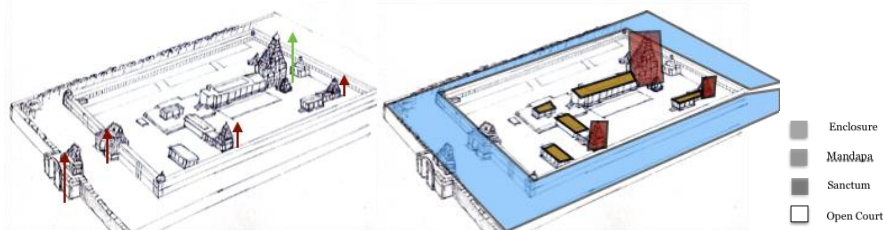


Figure 2, Depicting the hierarchical order and spatial divisions perceived in the temple complex

4.2. THE CONSTRUCT:

Temple construction starts with 'Bhu pariksha', proceed through twelve different stages and ends up with 'Pratistha'-the sanctifying ceremony. Regular geometry and precision falls in the frame from the conception to execution stage of Brihadeeswarar Temple, to comprehend the multi-layered, multi-dimensional aspects in its physical and conceptual form. The pyramid form of shikhara rising to the sky forming a straight line of sight unifies the divine power and the devotee. Articulation of ground levels using variations in plinth height also symbolises the progression of human life. Variations in degree of enclosure, and roof forms bring in, an order and hierarchy, which evokes admiration in the perceiver –

unknowingly with the involvement of senses.

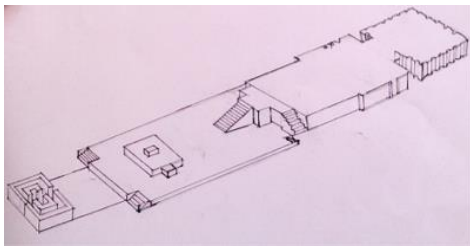


Figure 3(a), Articulation of ground levels

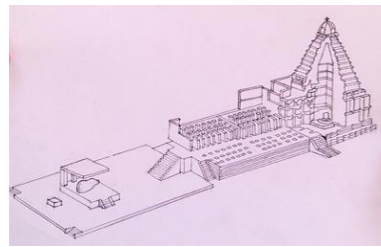


Figure 3(b), Variation in enclosure

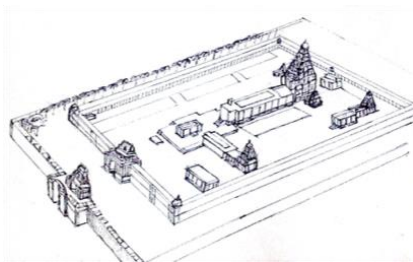


Figure 4(a), progression of Shikhara



Figure 4(b), Line of sight of Shikhara

Temple construction involves deep emotions and devotion, and is a lifetime achievement for those involved. From conception, to manifestation and then to realisation, the essence of the virtue and values are strictly followed. Prayers and rituals form an important part of the process, as it is the ‘offering’ to ensure protection during the entire process. Mind and body of the devotee is kept undisturbed, with only intention of purity in every sense and every deeds. So the involvement of senses during construction is of great significance.

From the selection of stones for construction, to the minutest detailing and intricacy during execution; visual, auditory, olfactory, gustatory and kinaesthetic perception occurs. A stone is selected for construction or for sculpturing, after experiencing the sound, warmth and texture through touch. During stages of construction, the plan was drawn directly on ground ‘to scale’, which correlates the ‘Sthapati’ with the site through all his senses. Each stone was laid in precision, manually, enhancing an emotional attachment and intimacy with them, felt through the sense of touch. The rules of Vastushastra render beauty, structural stability and quality of spaces by virtue of light, sound, massing and volume. This is shown through articulation of ground plane, enclosures and roof forms.

4.3. THE REALMS:

The complex in essence comprises three aspects - the domestic, the religious and the sacred, making the journey from the mortal to the divine world. Even though there is oneness; each part is the comprehensive composition and act as a single unit. Thus, 4 divisions in the complex unifies the whole to part and part to part relationship, the unifying factors being visual juxtaposition, adjacency, organisational axis and implied movement.

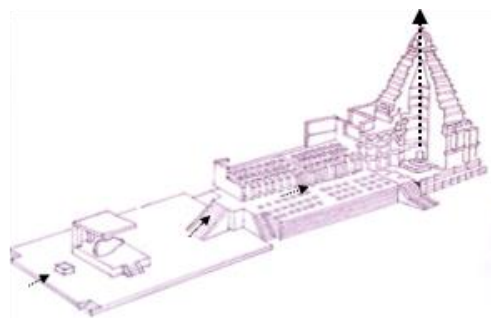


Figure5, Juxtaposing visual axis with path

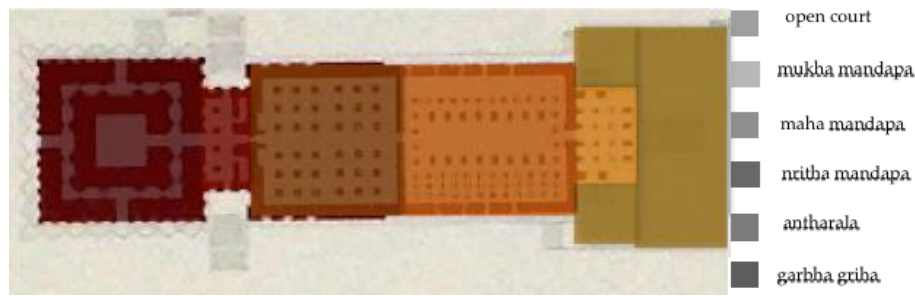


Figure 6, sequential arrangement of spaces showing adjacency

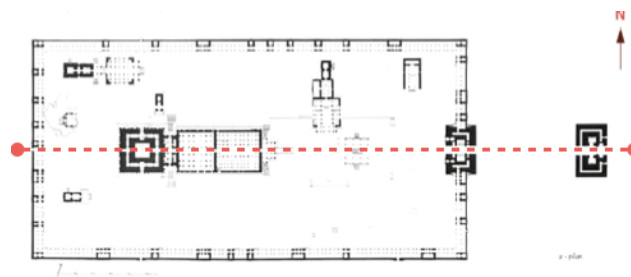


Figure 7, organizing spaces along the axis

As discussed in the initial study, the contribution of Indian architecture in sequential experience of space can very well be seen in Brihadeeswarar Temple. The spaces merge with one another so elegantly that a flow could be experienced to the perceiver. The flow of power field represents the phases of progress in a man's journey towards divine. The sculpturing in the gateways depicts the outward and diverse concerns of man, while proceeding, the inner walls attune his attitude, finally reaching the shrine in tranquility.

Interplay of light and shadow, varying intensity of light from well-lit mandapa to dark sanctum and the dynamic shadows contribute to the visual character and ambience of the spaces. Both presence and absence of light evoke visual perception due to the massiveness of the enclosure. The sequence is maintained in the detailing with the help of same material and aesthetic sensibility, boldness and precision. The haptic perception through the contours, profiles and textures and gustatory perception felt through the sculptors in granite stone, unfinished sometimes, heaviness of the material and treatment given on it, makes an inherent quality to various realms. The auditory perception also varies the level of intimacy according to the spaces, tranquility being prominent near sanctum, chanting prayers in front of it, echoes so produced, murmuring towards perimeter etc.

4.4. THE KINESTHETICS:

The temple complex is perceived as a unified composition along a single axis. Eventhough unified, the ritualistic movement in the complex guides the experience of the precinct. The visual framing of shikhara and the axis behaves prominent, hence the axis of orientation remains unchanged and kinesthetics occurs. Vertical thrust of shikhara is countered by the horizontal spread of long mandapa and plinth, having axis perpendicular to the former.

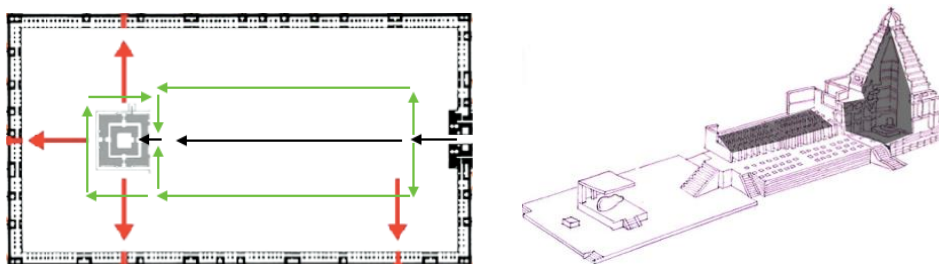


Figure 8, Alternative routes and entrances

The kinaesthetic movement is strongly felt by the haptic perception with bare foot, travelling through the warm brick pavements in Brihadeeswarar temple. The pradakshina path is textured differently, demarcating the path for the perceiver. Circumambulation being a ritual has a symbolic meaning of

encircling the universe. The senses also are stimulated in a sustained rhythm of increasing abstraction - mass, form, elements, material treatment, light and shade, texture and finally notion.

The real experience of built and unbuilt spaces are perceived when one moves through it. All sensory systems co-ordinate, to give a complete imagery of the space and the context. Intensity of light falling into each space varies, allowing well-lit spaces in the mukha mandapa, morning and evening rays into maha mandapa, moderate light into sabha mandapa with very few openings, and single opening with morning sun ray falling on the deity in the garbhagriha. This interplay, along with shadow of columns creates visual dynamism on the ground. The level of solitude increases from the outer zone towards the inner sanctum, where silence communicates with the perceiver. Upon reaching the inner sanctum, the closed eyes in front of deity evokes the fragrance spread around, compelling the perceiver to relax and memorize.

Sculptural detailing also decreases its complexity from the periphery to the inner core. It symbolizes the fact for a human to leave worldly pleasures and behold virtues and values to himself. In Brihadeeswarar temple, 108 dance postures of Bharatanatyam, classical dance of Tamil Nadu, are engraved, which along with haptic perception evoke oral perception. Many inscriptions picturing the story of temple construction is also seen in the plinth of the temple. Proportion and precision of sculptures even to a very large scale can be seen at many places in the complex.

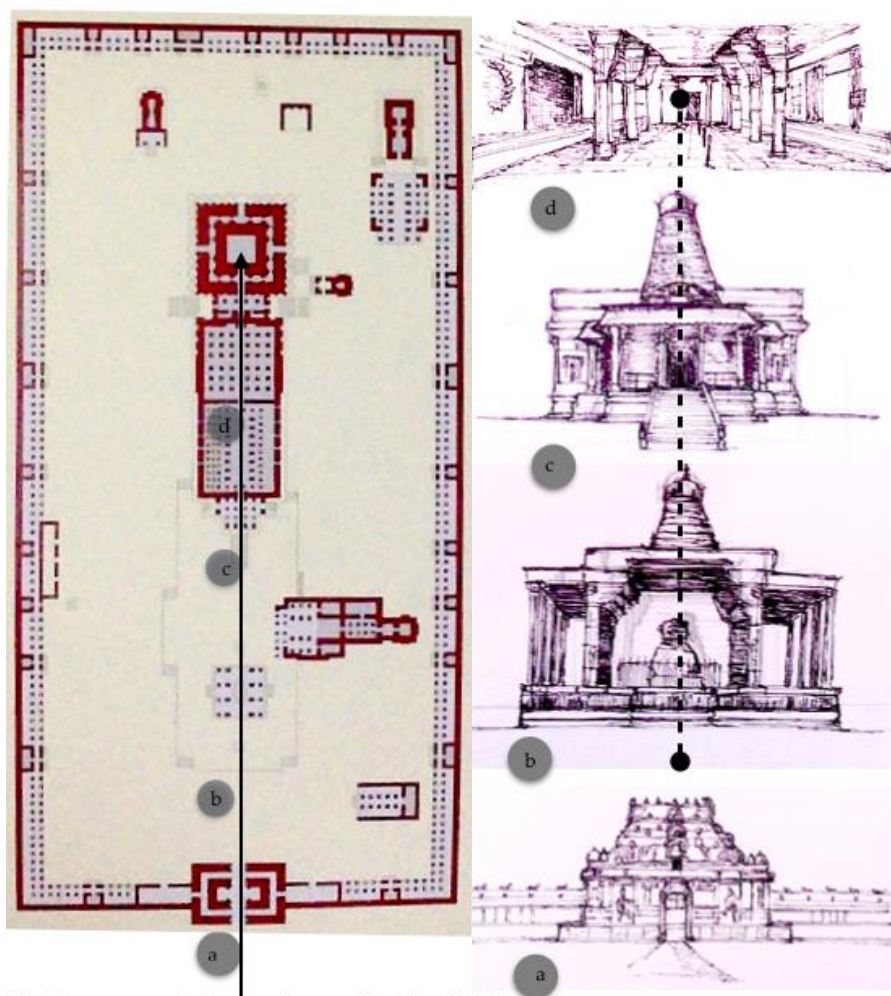


Figure 9, sequential movement along the axis

4.5. THE THRESHOLD:

Threshold talks about the varying degree of enclosure as traversed from the entrance gateway to the mandapa, a semi-enclosed, semi-open pavilion, to open courts with landscape feature, and finally to the walled enclosure of temple. This variation of enclosure gets dynamism due to the varying intensity of light penetrating them. All these are achieved architecturally by using site in terms of placement

orientation and creation of levels. The massing and kind of entablature, the carvings and the overlays of symbols are all bathed with expert sensitivity and knowledge of the quality of light falling on each of these.

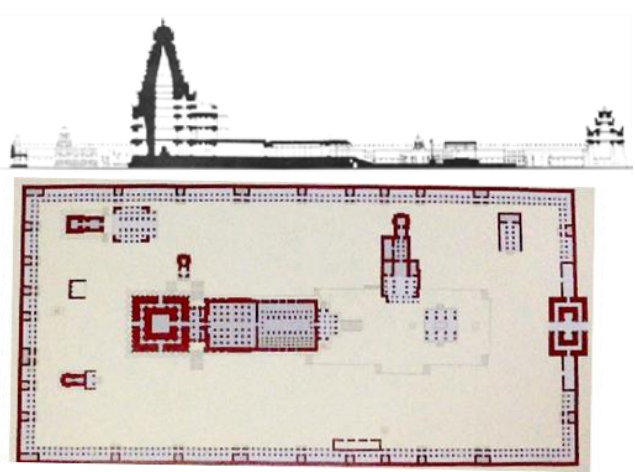


Figure 10, Plan and section showing diversity in structural massing

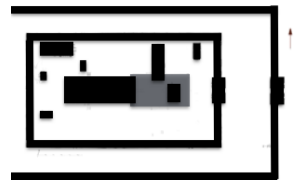


Figure 11, Built & Unbuilt

The temple has comparatively high degree of enclosure. Maha mandapa and nritha mandapa are enclosed on both sides, and only small openings are provided for light penetration. The dark interiors were initially lit up with diyas, that guided the devotee towards the deity. While moving forward, one can easily know the visual transformation from a well-lit open court to the dark massive garbha-griha, which symbolizes the journey of a man towards salvation. The massiveness of the structure is felt due to less fenestration. Externally, horizontal expanse of public spaces transform to vertically extended sacred spaces, and internally it diminishes in size to form intimate and closed cell. The rising plinth detaches the person from the earthly realm and expresses the ascent to the sacred.

4.6. THE NOTIONS:

The Brihadeeswarar temple is an architectural marvel, which stands unaffected by anything even after 1000 years of its construction. The proportions are comparable to the Kailash Temple, Ellora. Usage of granite stone throughout for construction exhibits variation in craftsmanship because of the difficulty in working with it, and this resulted in texture difference. The variations of the same material are a manifestation of variety in duality. The duality is the divine power existing in every creature and is symbolically represented as built -unbuilt, dark and light, finished and raw etc. The various ways of expressing the same is being elaborated above.

Variety in duality is expressed by vertically spread long shikhara to the horizontal stretch of large plinth and open spaces, deep and dark sanctum contrasted with well lit mandapa in front, open - to sky spaces with dim and small sanctum etc.

5. Inferences:

There are numerous approaches to review historic architecture. The approach adopted by historians has been to try and understand the context of which the product has been an outcome⁽⁵⁾. This fails to locate the product beyond a particular time and context and neither does it look at the principles and processes. But a building outlast humans, and hence it becomes imperative that architecture transcends the given time and context, remaining vital and adaptable to changed ones. Correlation between spatial attributes and human behaviour, induced largely through perception of the space construct, helps the space designer interpret, extrapolate and apply the principles of space organisation in a changed time and space. This understanding is possible through the personal evaluation and experience through a sensory perception, which signifies the relevance of the study.

From the study to analyse & perceive the spatial qualities through the structure using senses, kinaesthetic perception seemed to be the most interactive way to perceive a space. All senses were equally prominent in perceiving, while in movement, and hence could be summarised as a phenomenology inherent to any space-making. Kinesthetics is possible through creative juxtapositions of visual and movement axis. Volume, fenestrations and play of light guides the perceiver to move

through spaces and associate with it emotionally.

Sequential unfolding spaces, a schema for Indian Architecture, is clearly visible from the study. The spaces have simultaneous concealment and revelation of information brought about by an element of mystery, inviting exploration by shifting visual and physical axis. This kinesthetics, thus makes architecture experiential, where 'being there' is what matters. So creating spaces which evoke a kinaesthetic perception would involve senses, for better emotional and associational approach and understanding.

6. Conclusion

The study tried to analyse and perceive spaces in temples through various senses, understand the emotions, meanings and purposes it conveys. An architectural work is not to be experienced as a series of isolated retinal pictures, but in its fully integral material, embodied and spiritual essence. This aspect is emphasised through the study, and also the involvement of all senses in space perception was hence purposeful, and an important aspect in temple design. The study concludes with how senses help in connecting spaces directly between the individual and the surrounding making it a sanctified approach. Kinesthetics demonstrates the holistic experience of architecture, involving all senses for perception - an essential transformation of the past, for its relevance to the present and implied potential of the future.

7. Citations & References

7.1. ACKNOWLEDGMENT:

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