

# Experiencing Architecture through Senses

Gayatri Saoji and Sarika Bahadure

**Abstract---** *Architecture as commonly practiced has not only contributed to the disorientation of the architect from the understanding of the common man, but also to our deprivation of an authentic experience of place and being. Architecture in today's context emphasizes more upon the appearance than the feel of the space, hence making it an object for simply observation. Spaces can be experienced in true sense only when we get an opportunity to celebrate our senses. Thus, architecture that interacts with the human body through response of senses is discovered through this study. This research explores primary senses that include vision, touch, hearing, smell and taste in architectural language and experience of space through multisensory architecture.*

*The main intention of this study is to explore the various parameters that have an influence on creating architecture integrating all senses. For this purpose three auspicious places were chosen for detailed experiential analysis.*

*This research makes an effort to explore architecture communicating a sensory language, with a view to address characteristics of various senses getting activated and speculates the appropriateness in use of different parameters regulating the same.*

**Keywords---** *Sensory Architecture Language*

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## I. INTRODUCTION

THE boundary line between ourselves and the world is identified by our senses.' Juhani Pallasmaa (Pallasmaa, 1994)

*'Architecture is not produced simply by adding plans and sections to elevations. It is something else and something more.'* Steen Eiler Rasmussen (Pallasmaa, 1994)

The task of architecture is to strengthen our sense of the real, not to create settings of mere fabrication and fantasy. The essential mental task of the art of building is integration of all senses. Architecture articulates the experiences of being-in-

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*Gayatri Saoji, Final year student, Department of Architecture and Planning, Visvesvaraya National Institute of Technology (VNIT), Nagpur. E-mail: 17gayatri@gmail.com,*

*Sarika Bahadure, Assistant Professor, Department of Architecture and Planning, Visvesvaraya National Institute of Technology (VNIT), Nagpur. E-mail: sarika\_wa@yahoo.com*

the-world and it strengthens the sense of reality. Space can naturally exist or be created. To indulge all of our senses, and not just sight in case of created spaces, is what experiencing architecture through senses is.



Figure 1: Guggenheim Museum, Bilbao

As architecture cannot exist in isolation from the surroundings and is essentially an extension of nature into man-made realm, it can be completely experienced only when all senses of human body blend together to create original perception of space. It frames and structures experiences and projects a specific horizon of perception and meaning.

Centered on concrete human experience and architecture's holistic ability to connect with us on a physical and emotional level, this research is applied to the various case studies of auspicious places presenting analysis of sensory experience that a person gains after walking through the built environment.

## II. VISUAL HEGEMONY

In today's technologically modern world, buildings have turned into image products and we have become spectators of meaningless visual journey. One notable example of this is demonstrated by the Guggenheim Museum (1997) in Bilbao. This immense and shimmering titanium-clad building, conceived more as sculpture than architecture, dominates the city's skyline as pure visual abstraction and spectacle (Chmelar, 2010). The architecture is influenced very much by form, idea and appearance. It makes its presence so imprinted on eyes that one forgets self identity at the place thus eliminating the bridge between the self and the environment.

### III. CRISIS IN ARCHITECTURE



Figure 2: Bhunga Huts, Gujrat



Figure 3: Cybertecture Egg, Mumbai

In early days, architecture was a reflection of the culture, based on the contextual behavior of the local people, which thus was evolved from the values, emotions and need of the era. Bhunga huts in Gujrat are perfect example to explain the above. “Indigenous clay and mud architectures in various parts of the world seem to be born of the muscular and haptic senses more than eye” (Pallasmaa, 1994).

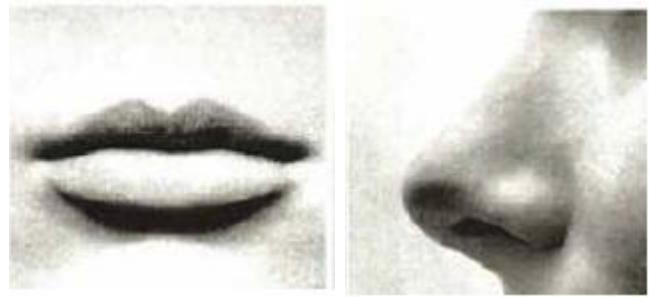
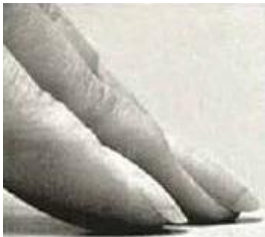


Figure 4: Visual Hegemony over Other Senses

Today the architecture is created by displaying contemporary materials which explains the neglect towards other senses than visual. For that instance, Cybertecture egg, Mumbai stands as a sculpture to be appreciated visually and suppresses other senses. Creating a visual masterpiece in architecture certainly pleases our eye but at the same time separates us from the world.

The bias towards vision and the suppression of the other senses has resulted in the disappearance of sensory and sensual qualities from art and architecture (Pallasmaa, 1994).

### IV. TOWARDS A SENSORY ARCHITECTURAL LANGUAGE

We cannot understand the building simply by looking at it and pondering about it from a distance; we have to be immersed within the space. An architectural approach conscious of all senses goes beyond visual appearances of a building (Theart). This idea is observable in Tadao Ando’s philosophy of architecture, “Architecture is not what is perceived by just the eyes, but what is experienced through the five senses” (Ando, 2010).



Figure 5: Church Of Light, Tadao Ando

The natural materials with their simplistic way of being if explored more can create architecture of sensory language. On this principle, designed in a minimalist way by using plain materials, Church of light plays with characteristics of natural light and gives users a sensory experience.

## V. NEED IDENTIFICATION



Figure 6 - Eye, organ of sense of vision



Figure 7 - Technological advancement focused on sense of vision



Figure 8 - Feeling shape



Figure 9 - Hearing sensation while moving through the space

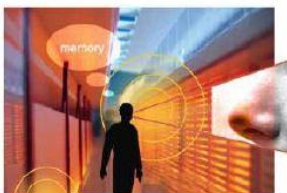


Figure 10 - Direct connection of sense of smell to memory

In the present lives sense of vision had actually meant everything to an architect and to everyone else. Pallasmaa argues that today's architecture is losing its authenticity because it is moving away from what the body senses as being reality or is able to recognize. The loss of the 'sensuous' in architecture creates an environment for the future user that seems to be turning increasingly into a non-existent area (Pallasmaa, 1994).

The study aims at identifying the design parameters in a built environment that are responsible for architecture activating all senses. The objectives of the paper is to understand role of all senses and their significance in architecture and identify various architectural elements those create spaces.

## VI. DATA COLLECTION AND INTERPRETATION

The study has tried to understand how we physically experience a place, and through what means architecture enhances this experience. For an answer to these questions, it is important to introduce senses in language of architecture, which will help in understanding how we experience the architecture.

### Senses in Architectural Dimension

In the following paragraph, examples for each sense individually explain its importance in architecture and the possible impact on us.

**Vision – Predominant Sense:** Plato regarded vision as humanity's greatest gift (Plato, 1994). Until today, sight prevailed on top of the hierarchy of the senses and our technological culture has separated the senses even further. As a result architectural design is meant to please this sense.

There can be two ways of imparting equal importance as of vision to other senses. One is to combine the sight with other senses. It uses a combination of senses that can bring back a sensory balance by creating new mode of vision. The second way is the lack of vision. Architecture is still perceivable for blind people over the other senses. The lack of one sense stimulates the others to develop.

**Touch – an intimate sense:** The eye is the organ of distance, whereas touch is the sense of nearness, intimacy and affection. The eye observes and investigates, whereas the touch approaches and feels. So when the light makes space for shadow our other senses are sharpened including the sensitivity to touch. The skin reads the texture, weight, density and temperature of matter. The tactile sense connects us with time and traditions (Pallasmaa, 1994). By touching material we experience more than by the bare gaze at it. Structures have a visual effect but by touching them we feel more components of their construct.

**Acoustics – the silent sense:** Hearing, ability to hear, is omni-directional sense, not focused like vision. A view at a building will not show the person watching the building but a building will return the sound of a person walking in it and listening to the sound. Sense of sight implies exteriority (The outer surface or structure of something (Oxford dictionaries) but sound creates an experience of interiority (Pallasmaa, 1994) The quality of being interior or inward (Oxford dictionaries).

One of the most exciting auditory experiences in architecture is tranquility. The absence of sound is actually creating the atmosphere. Silence of architecture is a responsive and remembering silence.

**Smell – space's odour:** One of the most persistence memories of any space is its smell. A particular smell makes us unknowingly re-enter a space completely forgotten by the retinal memory (Pallasmaa, 1994). Since it is not possible to name all the odours, spatial qualities are associated. That is why the expression "it is a vegetable market smell" is familiar to most people.

Spaces are identified by their peculiar smell, may it be a temple or fishing town or a hospital. Also, abandoned houses have the same hollow smell created due to emptiness.

**Taste in architecture:** By Juhani Pallasmaa, "To me, it is, I have experience on a number of occasions that certain qualities of stone, for instance, certain metals, detailing of wood, can be so subtle that you feel it in your mouth. I have made the observation that architecture can be subtle enough to even evoke a sensation of taste."





Figure 11- Taste in architecture generates by combination of all senses



Figure 12- Body as centre of experiential world



Figure 14- Crowd as an object of observation



Figure 15- Being a part of the crowd: sensory experience



Figure 17 - Falling water, by F L Wright



Figure 16- Falling water, Concrete cantilevered balcony

There is a subtle transference between tactile and taste experiences. Vision becomes transferred to taste as well; certain colours and delicate details evoke oral sensations. (Pallasmaa, 1994).

So the taste in architecture does not literally mean to kneel down and try to eat the stone bricks, but it means that architecture can make our mouth water just by the sight of appealing materials.

### Multi-Sensory Architecture

The eye collaborates with the body and the other senses. Every touching experience of architecture is multi-sensory; qualities of space, matter and scale are measured equally by the eye, nose, ear, skin and tongue. Instead of mere vision architecture involves several realms of sensory experience which interact and fuse into each other (Pallasmaa, 1994).

Temple is a place for multi-sensory experience where we respect all our senses through series of activities and architecture of temple. As soon as one removes footwear and enters inside the temple space, he touched the texture and temperature of the place. Wall of the temple reflect back the sound of bell that approaches us. Scent of flowers and agarbatti specific to the temple and Prasad given in return are responsible to activate one's nose and tongue respectively. As one approaches the garbhagriha, the eye can identify the decrease in intensity of light and nearness towards the dark.



Figure 13- Multi-sensory experience at temple

### Experiencing Architecture

Experience is more than an observation, more than knowledge of a space or object and more than a feeling. It is description of the complete, encompassing influence of a space, object or person on the user through mind, perception and senses.

This can be easily identified in the example of experiencing a crowd: by observing a crowd from a distance, one is aware of the crowd as an object external to oneself. If one is within the crowd, object-ness of the crowd disappears for him. Being a part of the crowd one can sense the crowd, feel the qualities through senses. He then smells the crowd, touches the texture of it, listens to its sound because now he has become one with the crowd. Same is true with architectural experience.

### VII. PRECEDENT

To understand the architecture integrating all senses, exploration of 'falling water' as a literature study has been carried out which emphasizes that multi-sensibility replaces distancing visual imagery by enhanced materiality, nearness, intimacy and context to the site.



Figure 18- Falling water, Driveway over bridge to entrance

### VIII. FALLING WATER

The Falling Water constructed in 1936 to 1939, is known to be a National Historic Landmark, initially designed as a second home for family of Edgar J. Kaufmann, Sr., designed by Frank Lloyd Wright centrally located in southwestern Pennsylvania. Conceived as a place for family retreat, Wrights intention for this place was for the family to live intimately with the fall, where they could see it, hear it, and feel it around them all the time. Observing this design gesture and standing inside it, one feels a part of nature and home. Through "Falling Water" one can explore how the different senses assist in our personal and subjective relationship to the built environment (Chmelar, 2010).



Figure 19 -Falling water, Rough texture of stone in living room



Figure 20 - Pool with Bear run in the background

### IX. SENSORY LANGUAGE

The structure begins to emerge through the woods when the entrance approach crosses the bridge over the creek, where the **sight** and **sound** of water rushing over the boulders and plunging down the waterfall commands attention, stimulates the imagination, and raises the level of anticipation for whatever lies ahead. Wright has cantilevered the house so that it sits right over the waterfall – so far indeed that the **waterfall is audible rather than visible**. However it is designed to be seen from the woods and rocks below the house and it is from this viewpoint that **audacity of architecture** can be fully appreciated.

The smoothness of horizontal forms of the concrete cantilevered balcony and canopies is in contrast to the roughness of vertical masonry pylons of local stone, helping to introduce texture through material. Absence of metal frames adds to the natural, organic feel of the home. In the living room, sight of the water flowing away through a huge glass window merges with the unconscious touch to this natural flow linking the outdoors with the indoors. The fireplace built from boulders selected from the site makes one feel the warmth of the place. A pool is formed one floor below, and a natural shower uses the mountain water from the fall another floor below. Integrating natural flow of water into the built surroundings creates a sense of closeness with nature. Woody smell of the forest due to delicate motion of surrounding trees activates one's olfactory sensation.

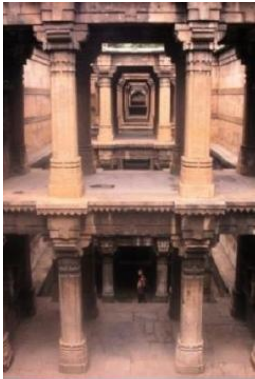


Figure 21- Dada Hari ni vav, spatiality of light a intermittently lit



Figure 22- Dada Hari ni vav, Water-well in the destination

A rectilinear step-well, native to India in which water can be reached by descending a set of steps, Dada Hari ni vav is a marvelous piece of architecture as sun cannot penetrate the bottom and evaporate the water. Step-wells have been used as a resting

Falling Water evokes a responsive sense-of-place absolutely in keeping with the rugged character of the massive rocks, the turbulence of the waterfall, and the natural persona of the forested site (Aguar).

#### X. ONSITE STUDY

As one can experience his senses to the maximum in a pure and divine atmosphere consciously, cases of auspicious spaces were taken into account for the study. Study was conducted to know the visitors' experience at three places namely, Dada hari ni Vav in Ahmedabad, Gitali Mandir in Wardha and Ramakrishna Math in Nagpur. Questionnaire was prepared considering the involvement of senses of people who visited that place (who have preliminary knowledge about the senses).

#### XI. CASE STUDY I - DADA HARI NI VAV, AHMEDABAD



Figure 23 - Dada Hari ni Vav, Stone carving imparting texture to the material



Figure 24 - Intricate detailing in stone stimulates sense of taste

place from the hot sun especially during summers. This place is considered as an auspicious place as various religions used this water for ceremonial purposes (Pandya). In today's context, the Vav continues to inspire visitors since six centuries for its historical and architectural significance.

The study suggests environment of the place to be calm. Some people visualize rectangular plane grid with vertical lines penetrating it, while some picture it from ground level and describe about a steps going down to dark. Moist smell of stone and water due to dampness is the most prominent. In terms of intensity of natural light, the structure was noted to be 'not too dark - not too light', at the same time, spatial expression of light proved the structure to be intermittently lit. Temperature felt inside the structure was nearly cool and cooler than the outdoors. All appreciated the use of materials and graded it as 'very good' and described the textures of materials such as uneven, rough, rustic stone, intricate detailing in carved stone and wood. When asked about the time they would like to spend at the place, response seems to be varying as it is affected by many other causes. The most liked features of the place are ambience, calmness, evoking use of levels and play of light that penetrates underground.

#### XII. OBSERVATION - SENSORY LANGUAGE

- Vision - Although the structure consists of a straight linear symmetrical organization of elements, the visual references continuously change due to inclined movement. At a pause point, it involves a shift in visual as well as movement path. At the termination of the journey, focus connects vertically up the sky and down to water well.
- Hearing – From outside the structure with variety of sounds received by the ear, one enters the structure and experiences tranquility of the place. Sounds of birds flying within the structure and their echoes activate one's ears. Sound of stone thrown in water activates the hearing sense which proves the existence of water.
- Touch - Touching the walls of the structure just by moving a hand on the carvings of the stone explains profoundly the delicacy in details. Natural beauty of the stone, its massiveness and its strength all are touched by senses. Reduced temperature is sensed from the touch of the stone pillars and from the cool air coming from inside which creates a feeling of going down in the earth.
- Smell - Journey through the linear structure having a destination in the end where water meets the stone, is accompanied by a continuous moist smell of stone in contact with water, carried by flow of air coming from over the water body.



- Taste - Building the entire design in a single material without making it monotonous is a difficult task. The degree to which a massive rock is carved out to look fragile makes one experience the taste in architecture.



Figure 25 - Gitai Mandir, Wardha



Figure 26 – Gitai Mandir, Visual transition from under-bridge



Figure 27- Gitai Mandir, massiveness of stone



Figure 28 - Gitai mandir, textures on stone emphasizing the message

stone members. No one experienced any particular aroma of any matter. Natural light in its intensity and spatial aspect was noted to be bright and throughout the structure. Nature of stone (like fort) is appreciated. Different textures of stone were not identifiably distinct by sight but were felt through touch. Garden, landscaping and stone engravings were liked because of their simplicity. Many people resisted to come again to this place as there is very much repetitiveness which kills the curiosity of the visitors.

#### XIV. OBSERVATION - SENSORY LANGUAGE

The place welcomes you with a visually appealing gateway easily noticeable from the main road, standing gracefully before the backdrop of green trees as one moves in passing the bushes on either side of the path.

#### XIII. CASE STUDY2 - GITAI MANDIR, WARDHA



Figure 29 - Gitai Mandir, landscape

This temple is unlike the general temple. It has no walls, no ceiling. The Gitai Mandir stands on 36 acres of land at the site of Jammalaji's Samadhi at Gopuri in Wardha, Maharashtra. A unique monument which has no idol, sanctum sanctorum or even a roof is enclosed by granite slabs. Each slab has a shloka inscribed on it, covering all the 18 chapters of the Gitai. Vinoba Bhave translated the Bhagwat Gita in the book Gitai.

Experienced as a calm place, visual percept of this place does not occupy any building but an open garden with boundary of

- Vision - In perspective arrayed by green shrubs on either side, vision is focused on entrance gate. Immediately after entrance, centrally placed Swastik catches one's eye. In the background series of vertically placed stone slabs with little gaps between the two consecutives obstructs the vision, but at the same time creates curiosity what exists behind it. One realizes the transition of space in terms of dark and light and vice versa, as one descends down the under-bridge and climbs up to be under sky.
- Hearing - Standing under a heavy mass of stone and listening to the echo of sound produced by reflection from adjacent surfaces is an enjoyment that activates one's hearing sensation. Sound created by walking on the dried leaves is an evidence of existence of trees around (for a person whose sense of vision is disabled).
- Touch - One feels the weight of the structure as one passes through the under-bridge touching the stone used in masonry. Sense of touch activated after feeling the warmth of the sun on skin gives one experience of open space. A continuous stone slab rough in texture is polished in a certain area where text is carved out of stone in order to emphasize the message to be conveyed.
- Smell - Breeze of fresh air carrying scent of local soil along with it generates a feeling of purely contextual setting. Trees such as gulmohar, boganelvia, audumbar because of their peculiar aroma, fill up the environment with soothing freshness establishing their presence thus activating of olfactory sense.
- Taste - One can feel the taste of the openness of the space, the freshness in the landscape as they notice the relationship between the self and the nature around that has been tried to be achieved.

#### XV. CASE STUDY – RAMAKRISHNA MATH, NAGPUR

Sri Ramakrishna Math is not a temple of a particular religion but a very holy and peaceful place. People of varied backgrounds who believe that God can be reached by different religions in different ways come to this place frequently for spiritual contentment.

Users felt the place to be calm. Visual identity of the place imprinted on the visitors is almost the same that consists of a huge structure with entrance of grand steps, crowned with a spectacular dome and dressed in intricate elements giving a feel of contemporary temple. There isn't any particular aroma of that place but air that sense of purity, though sheera (Prasad) and some flowers are smells observed in some visitors' responses. Light is bright throughout temperature is 'nearly cool', interiors being cooler than outside. Textures felt by the visitors are rough on exterior and smooth, shiny in interior. The calmness, the serene environment, the places to sit in the bhajans is what many visitors liked the most where they feel connected to the activities happening inside.

## XVI. OBSERVATION - SENSORY LANGUAGE



Figure 30 - Ramkrishna Math, appealing visual image of the structure



Figure 31 - Ramkrishna Math, side view



Figure 32 - Ramkrishna Math, interiors showing intricate workmanship

- Vision - Visual image of huge structure with a flight of steps guiding the main entrance to the temple catches one's eye as soon as one enters from main gate the premises. Transition from the bright sun outside to the inside of the place is immediate, so is it from open space to enclosed space.

- Hearing - Silence in architecture is experienced specially in interiors by creating good accoustical barrier. Calmness, the serene environment of the place creates a feeling of connectedness.

- Touch - Use of materials stimulates tactile sense by incorporating various textures such as Rough on exterior by using local sandstone and smooth and shiny in interior by using marble. Haptic sense observes temperature which makes the interior space much cooler than outside.

- Smell - Speaking about

Fragrances, there isn't any particular aroma of that place but air that sense of purity, except some faint smells of sheera (Prasad) and some flowers.

## XVII. COMPARATIVE ANALYSIS

Comparative analysis shows that the sum total of the experience in case of Dada Hari ni Vav, Ahmedabad is sensorial and spiritual which touches senses as well as mind. The meaning is in the journey and not in the destination. In Gitai Mandir, Wardha, overall experience is inclined to please visual and tactile sense over the others. And in Ramkrishna math, Nagpur, it is observed that though efforts have been made for acoustical quality of space to be appropriate to feel peace, experience of the place is dominated by vision due to use of shiny materials in interiors and monumentality of the structure over all other senses. (Refer Annesure-1)

## XVIII. CONCLUSION

From the case studies of three different auspicious spaces at various places with various site context and typologies of

built environment, the study has concluded by putting forward various parameters that have an influence on our experience of the place and the different means by which they help in activating our senses.

These parameters are as follows:

a) Material - Haptic sense – Different effects on materials create different textures, temperature of material, Visual sense – Colour property of material, different textures, olfactory sense – natural materials have natural aroma, taste – detailing in a material, b) Light - Visual sense – Effect of shadows, mass to void relationship, reflectivity form material, transition between indoor and outdoor, haptic sense – Transition between sun and shadow, taste – colour, reflectivity of material, c) Frame of the structure - Visual sense - Physical components combined to create space that creates a visual impression, d) Scale of Space - Visual sense – Tiny/huge structure, hearing sense – Intimacy of the enclosing surfaces, scale comprehensible, e) Character of space (Open/semi-open/closed) - Visual sense – Dark/Light spaces due to exposure to sun, hearing sense – sound of natural elements in open space, sense of nearness in closed space, olfactory sense – varying degree of closeness to the site thus to natural aroma of the context

The task of creating multi-sensory architecture is complex as every space requires its own different interpretation in each case. Nevertheless, effort can be made to evolve architecture with materials communicating their characteristics, their effects in light and shadow, textures obtained after working upon them and natural aroma they possess. There are no measurable or tangible aspects based on which evaluation of multi-sensory architecture can be substantiated. However certain parameters can help in derivation of the essence of the space in consideration.

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Annexure-1

Table 1 - Comparative Analysis

CASE STUDIES PARAMETERS	DADA HARI NI VAV, AHMEDABAD	GITAI MANDIR, WARDHA	RAMAKRISHNA MATH, NAGPUR
Environment in terms of noise	Calm	Calm	Calm
Visual image	Variety observed. Rectangular plane grid with vertical lines penetrating it, steps going down to dark	Similar image. Not any building but an open garden with boundary of stone members	Imprint on eyes. Huge structure, grand steps, spectacular dome and intricate workmanship
Aromatic perception	Moist smell of stone and water due to dampness	No smell detected as such	No particular aroma except smell of <i>sheera</i> (Prasad) and flowers
Intensity and spatial expression of light	Not too dark – not too light, intermittently lit	Bright and throughout	Bright and throughout
In terms of temperature	Nearly cool and cooler than the outdoors	Same as outdoors	Nearly cool and interiors cooler than outside
Use of materials	Very good	Good	Good
Feel of Textures	Uneven, rough, rustic stone, intricate detailing in carved stone and wood	Rugged nature of stone (like fort), Textures of stone were not identifiably distinct by sight but were felt through touch	Rough on exterior and smooth, shiny in interior, Textures in interiors were visually touched due to their reflecting properties
Liked/disliked the most	<u>Liked</u> - Ambience, calmness, evoking use of levels and play of light that penetrates underground <u>Disliked</u> – Smell of bats	<u>Liked</u> - Garden landscape and stone engravings because of their simplicity <u>Disliked</u> - Repetitiveness which kills the curiosity of the visitors.	<u>Liked</u> - Calmness, serene environment, places to sit in the <i>bhajans</i> where they feel connected to the activities happening inside. <u>Disliked</u> - glazed vitrified tiles - accident prone