Architectural Knowledge Systems Approach to Urban Sensescape

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Abstract

In present time, the architectural development around the world is creating the images of modernity and contemporariness. The fabric of the cities is changing from traditional to modern. The traditional knowledge of architecture and planning is losing its importance in the process of rapid urbanization. The historic cities are the manifestation of traditional knowledge which embodies the rich sensory experience within built form and provides the quality of life. Urban Sensescapes of historic cities make a notable contribution in creating sensually rich urban environments. This paper provides an insight into the traditional architectural knowledge systems by focusing on the sensory experience of historic built environments. Based on interpretive epistemology from the cognition framework, the paper posits that the traditional Indian architecture and planning have so much to contribute to the theory building for the contemporary sensory architecture.

Keywords: *Human Senses, Traditional Knowledge System, Historic Built Environment*

1. Introduction

The understanding of senses and how they facilitate the user's engagement with space in urban life is rooted in the Indian traditional knowledge systems. Most of the Indian traditional cities are celebrated examples worldwide as they portray layered urban fabric and multi-sensory character of urbanity. The traditional knowledge systems of the human senses are beneficial to abstract lessons and need systematic investigations to link implications for contemporary sensory architecture.

The architecture, urban design and planning have a great impact on human well-being, as Winston Churchill said, "We shape our buildings; thereafter they shape us." Senses have been dealt since ages in Indian traditional architecture when compared it with modern and western architecture. In Indian traditional architecture that is *sthaptya*, there is special attention given to the experience through *panchendriya* (five senses). Traditional architecture manifests the multi-sensory experience of space in terms of *gandha, rasa, roop, sparsh* and *shabd* (smell, taste, shape, touch, and sound respectively).

Although five senses of the human being have different meanings to different societies, common lessons from it can be drawn to develop the theory of contemporary sensory architecture (Y. R. Jabareen 2006).

From an indigenous perspective, the study of traditional architectural knowledge systems can be directly linked to the development of methodical studies of traditional writings on planning and design typically classified under the rubric Vastu Shastra or Shilp Shastra. Traditional literature on Vastu Shastra is scattered within extremely varied traditional writings, such as manasara, mayamatam, and aparajitaprchha. The celebrated examples of the city designed according to these principles include Harappa, Mohenjo-daro, Varanasi, Pataliputra, Taxila, Bhubaneshwar (Ekamra Kshetra) (UNESCO 2017), Jaipur, Madurai, etc. In this traditional literature of manasara, Shilpa Shastra, mayamatam and Vishwakarma Vastu Shastra, different typologies of plans for Pattana, Nagara, and Grama are illustrated. The city of Madurai was planned according to the Rajdhani plan as described in manasara which is one of the Shilpa Shastra. The physical manifestation of manasara can be seen as fivefold concentric rectangular formation along with center point as Meenakshi - Sundareshwara temple and the growth of the city with concentric street pattern and built-form focusing the temple complex as the focal point. These cities are considered as one of the most skillful and elegant exercises in urban design.

In recent decades, the process of architectural homogenization can be seen across the world and, theories and principles of architecture from the developed countries have been increasingly practiced in developing countries including India. The cities of developing countries are facing the tremendous pressure of urbanization along with the new trends of global tourism and other transforming agents. Rapid human population growth has to a great extent shifted the focus of architecture and planning to complex services and construction technology around the world. And hence, contemporary architects often overlooked the human concern required in the designing of built environment. This shift in the architectural paradigm is a most criticized phenomenon by contemporary researchers and scholars. In Europe, Asia and Latin America, many of the existing important historic built environments lost their traditional function under the pressure of these transforming agents. New architectural trends, an introduction of express highways through the historic core and market processes have impacted historic cities leading to various transformations. These transformations can be classified as tangible and intangible changes in urban areas, degrading the quality of the environment, increasing built-densities, inadequate open spaces, and loss of publicness of spaces. It has a direct impact on the identity and character of the cities, its spatial structure, as well as on the lifestyle of the community. These urban transformations often cause the deterioration of traditionally planned and organically grown urban fabric and its sensescape.

Based on interpretive epistemology from the cognition framework, the paper posits that the traditional Indian architecture and planning have so much to contribute to the theory building for contemporary sensory architecture. Since the intangible values in traditional architectural knowledge systems are not much researched and recognized,

conservationists while conserving historic cities often focus their energies on tangible secondary attributes and issues such as traditional facades and imagery. Hence, the research on traditional sensescape is important, and helpful to continue the values of sensory architecture for present and future generations.

2. Discussion:

An individual feels pleasure and protection when discovers resonance in the built environment (J. Pallasmaa 2005). The visuals, sounds, smells, tastes and tactile sensations of space evoke some emotions and provide information of that space. It is important that the multidimensional individual's perception cannot be simply reduced to reason or a variable of the built environment setting among others. Based on earlier findings, the experience of space through senses differs in terms of meaning for different individuals, depending on their ethnicity, socio-cultural background, personal experience, and mood. The experience also depends on various other factors, such as knowledge and education. Given that, the understanding of 'the experience of a space' is a multidisciplinary task, the authors of this paper acknowledge that there should be conscious social, and psychological research efforts to discover the meanings that built environment present in architectural studies. The interaction of an individual and the built environment is an engagement of various senses creates bonding with that built environment and, encourages an individual to stay in that environment. In historic cities, the streetscapes, build-forms, public spaces and urban fabrics often show a strong integration of sensory attributes as discussed in the following sections:

View:

The viewscape is most dominant sensescape in cities. The viewscpae in cities can be described as the views, vistas, focal points, landmarks, etc., which help an individual to navigate and relate to the built environment. An individual interacts with built form through visual sense by sensing streetscape, architectural detailing and the skyline of the city.

Traditional knowledge of viewscape design included rich detailing features such as doorways, jharokhas, pillars, niches, etc. Because of these features, traditional cities have cheerful streetscapes and, lively and vibrant spaces, which create an environment that is curative and restorative (A. J. Wahurwagh, A. R. Dongre 2015). The historic built environment became almost inherently intense and inviting due to the short distance between experiences and great functional variety (J. Gehl, L. J. Kaefer and S. Reigstad 2006). The presence of human-friendly streetscapes fosters a strong sense of belongingness as well as psychological and physical security. The historic built environment of cities like Jaipur, Jaisalmer, and Jodhpur shows a unique space character because of traditional principles of architecture and urban design (R. Hooja 2008) (refer Figure 1). The visual is outstanding not only in terms of its imagery but also because of its detailing, ensuring climate responsiveness that is highly functional features.

Thus, the traditional knowledge of viewscape design contributes in the designing of present architecture in various ways to improve the quality of life (Gehl J 2006).

Figure 1. The unique space character of the traditional built environment: transparency due to multiple openings, more interactions, unique sensory experience due to the variety in building details. *Source*: (Iindiatourism 2017), (MyIndianStory 2015), (TravelBlog 2011)

Sound:

The architecture does not just engage the visual sense, but also get influenced by the sense of touch, sound, and smell. The sound is invisible but has the power to change the space characteristics (J. Schulz-Dornburg 1999). The experience of public space depends largely on the acoustic quality of space formed by the built envelope, as sound intensify or dampen the visual image and provides a better understanding of that space.

The soundscape of the historic built environment amplifies the cultural value of space. In traditional historic city centers, temples, mosques, with closely spaced buildings have the quality to block the sounds and thus create silence. In historic cities, the narrow lanes, galleries, the cultural and religious buildings weaved in residential fabric have particular acoustics and hence meanings. The church bells, live music performances, the sound of humans and various activities and, natural sounds, are the positive components of traditional soundscape which make it interesting and cheerful (A. J. Wahurwagh, A. R. Dongre 2016).

In the manasara principles of city planning, the sensory experience of the built environment is emphasized. For instance, in manasara, the procedure of selecting a site for different typologies of a building is given, which includes the analysis of prevalent sound on the site along with soil analysis. The land having natural sounds like horse, elephant, bamboo, ocean, conch, *veena* (an Indian string instrument) and the sounds of all other animals which are harmonious with human vibrations are considered beneficial. The traditional sounds like folk songs, chanting and the ringing sounds of temple bells are some of the instances of positive attributes of traditional soundscapes (Jian, GE. , Min, GUO., and Miao, YUE. 2012).

Smell:

The nostril awakes a forgotten image which leads to fall an individual into a vivid dream. The nose makes the eyes to remember (J. Pallasmaa 2005). The smell of a particular built environment can express the identity of that community along with the architecture, lifestyle and socio-cultural background of the community. The settlement can be recognized and characterized by their smellsacpe.

According to various scholars, in urban areas, the smell acts as the resource which provides various cultural and social benefits to the community (G. Dann, J. Jacobsen 2003). The smellscape is an important intangible aspect of urban environments, which helps in creating a sense of space as it provides a sense of identity through the strong memory of space and, the sense of belonging defined by human cultural and spiritual values.

References of smellscape design in Indian traditional, religious and ancient philosophical literature can be seen such as vedas, epics, Ayurveda and perfumery treatises. The charaksamhita and susrutsamhita describe the role of smell in the diagnosis of diseases. McHugh explores the literary references to the properties of the smell of sandalwood and the uses of a range of substances known as *candana* while elaborating his research on Indian smellascape (James McHugh 2012). The knowledge of smellscape was the important part of traditional city design as can be seen in the historic city of Lucknow. In traditional city planning, smellscape of the market (in addition to its central location within a city was an important design concern. Smellscape of traditional markets such as spices, floral and other allied markets have specific or pleasant ambiance where an individual (or consumer) feel happier and remember the product of that market through smell and linger longer in such market. These design attributes can also be seen in the traditional market around divine religious structures. Such practices foster the identity of the city through smellscape. The foods, customs, festivals and such intangible attributes add on to the smellscape of traditional Indian cities, contributing immensely to Indian tourism industry.

Touch:

The perceptual world is guided by the touch, being more immediate and welcoming than the world guided by sight (P. Zumthor 2006). The built environment consists of the artificial arrangement of different surfaces of different materials with different pigmentations, different textures, illumination, and degrees of transparency (or translucency), and of the spaces between them (J. Lang 1980). Touch is ‘contact’ or ‘encounter’ that is known as *darsana* in Indian philosophy.

The historic built environment shows, minute concern on the factors that contribute to the tactile sense through the feel of comfort by heat, temperature, and shades. In Vastu Shastra, the sun is mentioned as one of the God which gives many clues for designing of built environment in addition to sunlight and ventilation. Touch sense helps us to feel good in a particular built environment by satisfying levels of light, shadow, temperature, and wind. Traditional knowledge is a huge umbrella encompassing sustainable building techniques such as, use of materials (stone, mud, bamboo, timber and construction techniques) which are environment-friendly. The traditional science of Vastupurush mandala, have a great concern to the orientation of buildings and streets satisfying above positive attributes of sensory built environment designs.

This knowledge can be incorporated in the present scenario to design sensescape with consideration of setting, context, and human-friendly ambiances.

Taste:

In addition to above sensescapes, historic built environments are celebrated examples for its tastescape design. Emotional attachment, a quality observed in most of the historic built environments, is also because of its gastronomic pleasures as noted by Graham M. S. Dann in his research work of smellscape tourism (G. Dann, J. Jacobsen 2003). Culinary entwine various factors that contribute to the enjoyment of the experience and reflects the cultural background of the built environment. The local food and beverage play a vital role in building (or shaping) the very character and image of that space. To a great extent, it also contributes to the smellscape of that particular space.

Gustatory portrays the image of cultural experience, status, and cultural identity. Here traditional architecture of interior spaces plays an important role, as it is evolved with the food customs such as, how the food is supposed to be cooked, served and eaten, further building the image of that particular space (Maggie Roe 2016). Most of the historic built environments strongly show the interrelationships of physical forms, the spatial organization and food pattern with the social and cultural values of the community.

Issues and present concerns:

Historic cities are facing the pressure of urbanization. New additions and alterations in the traditionally planned and organically grown sensescape are transforming and threatening the spatial character of the historic built environment. Further, affecting the sense of place, identity of communities and values associated with it. There are many lessons to learn from such historic built environments. The uncontrolled urbanization and the insensitive developments in the historic built environment lead to the detachment from the traditional architectural knowledge systems that are sustainable, livable, multi-sensory and symbiotic (Debashish Nayak, Anand Iyer 2008).

In Indian cities, there is a drastic transformation in the viewscapes in past few decades. The new urban development happening in the immediate setting of the historic built environments is threatening the existing well-evolved viewscape obscuring the visual dominance, importance, and aesthetics. However, much of this transformation is based on an imagery of an advanced and generally perceived the western world (M. Arya 2008). The countries like India have a tremendous tradition of the building that is a cumulative wisdom of centuries of understanding the context. The blind adaptation of western techniques in the Indian context is harming the sensescape of the historic built environment. The use of material like the glass facade for aesthetics is resulting in maximizing heat gain resulting in an increase in the energy consumption for cooling.

The building design not following the context is threatening the visual harmony of historic built environment. Compact historic built environments encompass a wealth of visual impression with rich sensory experience. In contrast, advertising posters and plain facades along the contemporary streetscapes are poor expressions (refer Figure 2). Hence, there is a need to understand the traditional architecture and its visual principles and to transform them into comfortable and suitable solutions for today.

Figure 2. Insensitive additions and alterations in the traditional streetscapes.
Source: (Mapio 2017) , (AmazingIndiaBlog 2016), (AboveUsOnlySkies 2017)

The advancement in technology has a major impact on the soundscape of the city. In Indian cities, the sound pollution (noise) became an important form of discomfort and unlike historic built environment; it has a negative influence on the quality of life in urban public spaces. In contemporary architecture, the sound is rarely perceived in a positive manner, whereas, in traditional architectural knowledge systems it was an informative and explorative social perception instrument. The contemporary religious architecture often does not have the impressive environments similar to traditional religious architecture. The reason for this difference mostly lies in its acoustic properties. The traditional religious architecture harmonizes with the experience of the respective ritual performance and, it's sensual and in particular the acoustics of such environments. In a historic built environment, sounds are well-articulated with architecture and critically tackled not only at building level, but also at the city level.

In the present scenario, Indian cities are growing by neglecting the odour's contribution to the overall sense of space. Like sound (noise), the smell is also dealt from its negative perception of pollution in the contemporary city planning (K. Wankhede and A. J. Wahurwagh 2017). The traditional smell of regional food is diminishing by the homogeneous smells of other global food. The smellscape of traditional market lanes is no longer a part of city smell as the physical form of markets has changed (such as shopping malls). In contemporary architecture, specifically in the Indian context, an individual often encounters with poor air quality and nuisance odours. As seen (or experienced) in a historic built environment, the present science of architecture, urban design, and planning need to emphasize beyond the negative dimensions of smellscape as smell too has a positive role to play in city design.

The traditionally planned and organically grown touchscape is losing it's very character mostly because of the use of new materials. For instance, the insensitive paving, which is helpful in controlling the growth of weed and controlling issues related to dust, lead to various other bigger problems such as urban heat island and depletion of the ground water table as less water percolates to the ground. In addition to this, the hard paving increases the glare problem as sound reflective surfaces and sound absorptive surfaces are changing the well-evolved sensescape and thus; the unsustainable materials are leading to the destruction of the environment at large.

The visual observation alone is not sufficient for the experience of the spatial qualities of a space, the other senses mainly smell and taste senses also help in storing memory of that space. When the tastescape matches with the built environment, the cultural values get amplified. In the present scenario, there is no special concern given for tastescape and because of homogenization of food, which is a major component of tastescape, is losing its uniqueness and impacting on the identity of such space. A strong identity of space and belongingness, a typical characteristic of the historic built environment is also because of its tastescape. Whereas tastescape of the historic built environment is also an important contributor for the sense of identity and belongingness. And hence, it needs to be entwined while designing architecture or urban built environments.

3. Conclusion:

Historic built environments are standing documents of the traditional architectural knowledge systems, which have the qualities of human concern, engaging various senses, creating a bond with space, encourage an individual to stay in that space and of potential relevance in modern days to contribute to the theory building for contemporary sensory architecture. However, these traditional architectural knowledge systems are declining because of the urban development pressure, lack of understanding, the processes of globalization and architectural homogenization. Therefore, it requires urgent careful documentation, study, and analysis.

In this context, the present contribution provided an insight into the traditional architectural knowledge systems of Indian cases of historic built environments, with an emphasis on the sensescape, and linked implications for contemporary sensory architecture. The traditional architecture and planning represent various urban elements and attributes which are at par with the contemporary sensory architecture and sensitivity towards the local climate and, natural resources. This research can be the foundation for further research into the traditional architectural knowledge systems recognition leading to cultural continuity and, a nascent step towards the theory building for contemporary sensory architecture.

Further detailed research is required for viewscape, soundscape, smellscape, touchscape, and tastescape which will facilitate understanding of the traditional architectural knowledge systems.

It has considerable potential to perform research, specifically from developing countries whose traditional architectural knowledge systems are not much affected because of the pressure of urbanization and globalization. Sensescape with the traditional architectural knowledge systems approach is an emerging research domain that needs urgent attention for the conservation of this dying wisdom.

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