

Influence of the urban fabric character on emotional conscience of the perceiver: In accordance with revelation of Sir Gordon Cullen's principles reflected in Taj Mahal's physical setting in India

Ravindra Patnayaka and Suryakala Nannapaneni

School of Architecture, GITAM University, Visakhapatnam, Andhra Pradesh, India

Copyright © 2016 ISSR Journals. This is an open access article distributed under the **Creative Commons Attribution License**, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT: A city is more than the union of its denizens. It is a blend of various land parcels with specific content and context. Apart from the physical setting, an urban space with its attributed character and identity retains the contentment of imageability of a perceiver. Articulation of solids and voids within a given stretch characterizes the urban fabric of that particular vicinity. Theorists confess that one could regulate the emotional quotient of an observer without discontentment, by the way of designing various contextual urban spaces. In 1961, Sir Gordon Cullen postulated concepts like "serial vision", "here and there", "closure and enclosure", "infinity of space" etc., portrayed the sense of appreciating designed urban spaces while shredding the boredom throughout ones solo journey. The systematic planning and visualization caliber of the designer, reflected in the manifestation of many of the then image making urban parcels are barely available with predefined parameters, and rely upon certain profound design principles. Taj Mahal complex in India, a timeless architectural marvel had its global identity not only as a built mass of marble, but also bags the potential of retaining the image making pleasure of a visitor with its exuberant enunciation of volume and space. This paper attempts to discover certain principles of Gordon Cullen reflected in Taj physical setting that intensifies and escalates the imageability, and then concludes justifying the significance of visualization in the design of an urban space so as to stimulate the emotional conscience of a visitor.

KEYWORDS: Gordon Cullen, Serial Vision, Taj Mahal, Here and There, Closure and Enclosure, Existing view and Emerging view, Focal point.

1 INTRODUCTION

A city comprises of many elements other than its dwellers. It is an organism whose development may not be predicted. A city is a composition of various elements within a habitat constituting urban mass, urban space, architecture, landscape, physical planning, etc. [1]. The design of cities aims at developing a personal relationship with their respective inhabitants and the elemental parcels such as functional, recreational, work space, Central Business Districts, certain spaces of interest etc. and defining the distinct borders within an urban environment [2]. Eventually, any district with its respective specific character bags the potential of becoming an image making land parcel with the presence of certain natural or man-made marvels, whether it be a naturally occurring picturesque scape or a well designed built environment. Combinations of certain configurations of mass and space has a potential of becoming a timeless aesthetic attraction [3]. Designers of classical and medieval times hardly used the potential of postulating design philosophies and principles in stimulating the senses with the kind of approach in designing spaces despite having exuberant visionary and skill, until various urban philosophers projected their views in doing so [4]. A place can make us feel satisfied or dissatisfied with the way it is designed and the elements used in the composition. Few places we enjoy, some we appreciate, others we dislike, revisit, recommend to a friend, etc. as a wall can create a sense of interest and become an image making element [5]. Identifying or designing with certain specific features that make us feel the sense of eternal life within a place has been explained by many philosophers [2]. One among them was Sir Gordon Cullen, an architect and urban designer who was the key inducer and activist in developing the British urban design theories during the post-war period. According to Gordon Cullen "What is exactly gazed by an urban inhabitant is difficult to know as their observations may be sensitive or subtle." Confessing the above, he postulated various interesting principles correlating urban space designs with the psychological conscience of the inhabitant or visitor in his book, "The

Concise Townscape". Taj Mahal, an epitome of the Mughal art, one of the Seven Wonders of the World is an architectural marvel which exemplifies the accordance of majority of Sir Gordon Cullen's principles of Townscape.

2 THE TAJ MAHAL PHYSICAL SETTING

"Taj Mahal represents the finest architectural and artistic achievement through perfect harmony and excellent craftsmanship in a whole range of Indo-Islamic sepulchral architecture. It is a masterpiece of architectural style in conception, treatment and execution and has unique aesthetic qualities in balance, symmetry and harmonious blending of various elements." - UNSECO.

Taj Mahal is a white marble mausoleum on the south bank of the Yamuna River in the Indian city of Agra. This monumental masterpiece i.e., the tomb of Mumtaz Mahal, beloved wife of the Mughal emperor Shah Jahan [6] was commissioned in the year 1632, under whose patronage the city of Agra had been transformed into a flourishing city of trade. The city gained its esteemed name, "Riverfront Garden City", as a result of its punctiliously designed gardens, profuse flowering bushes and fruit-bearing trees during the Mughal era [7].

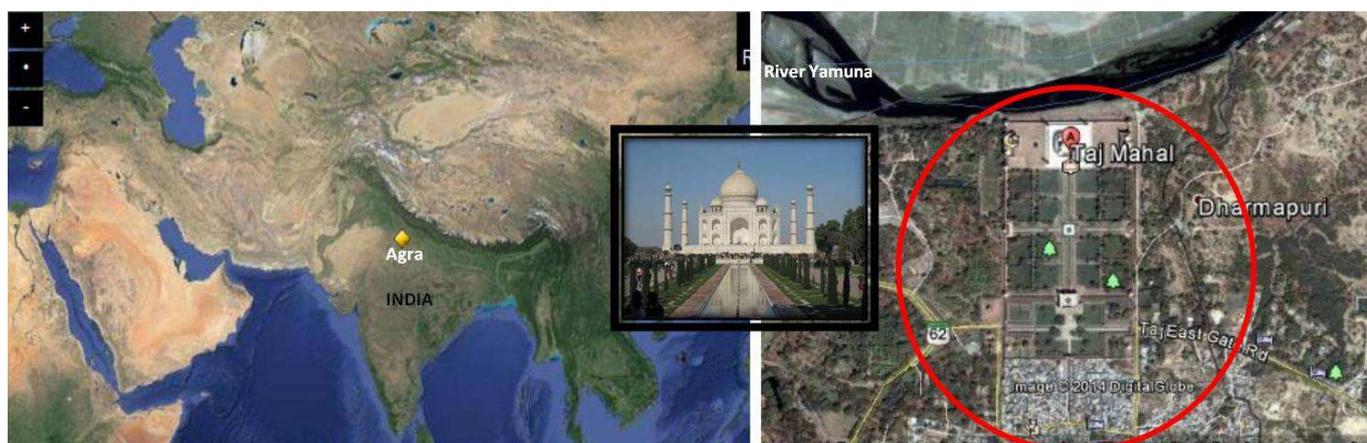


Fig. 1. Location and satellite image of Taj Mahal vicinity, Agra, Uttar Pradesh, India

The Taj is the focus of a coordinated complex of buildings and gardens, bordered by a river onto North, enclosing walls and gateways that frame ones viewport while approaching [8]. The Taj Mahal's entire setting is perfectly symmetrical and geometric. The building is raised on a podium, and the towers at its corners define a box of space that sets it apart from its surroundings [9]. This also reminds of a centuries old cultural division with symmetrical designs and ornamental details.

Originally the Taj Mahal was built as a part of a vast complex, in which this funerary architecture was linked formally and functionally with various utilitarian buildings, bazaars and caravanserais, in relation to the city of Agra. The builders combined the funereal paradisiacal symbolism with political propoganda which is evident in the perfect planning and the minute attention taken in every architectural detail [7]. The Taj expresses the Mughal architectural principles in the canonical form set physically in the structure.

2.1 AN URBAN ARTIFACT

The physical and aesthetic urban context, within which the Taj Mahal was built, includes a five kilometer long public promenade with buildings such as opulent villas, mansions, mausoleums, set in public or private gardens overlooking the waterbody [10]. The Taj was built close to the bank, with an 8.7 metre high and 300 metre long podium which turns up into the river facing terrace with a series of steps known as ghats at its base leading to the water. On transfer of the Mughal capital from Agra to Shahjahanabad, the riverfront setting of the Taj was occupied by commoners who used the water for sacred rituals and festivals [11].

2.2 THE CAMPUS

The Jilaukhana (Northern edge) was a transitional forecourt between the funerary and commercial realms of the complex, where the royal guests were received.

The Caravanserai is a two-storey commercial complex also planned on the Char Bagh theme with its streets forming the principal open space of a bazaar and individual rooms within an arcaded verandah of multi-cusped arches supported on slender columns. With the boasting diversity of local and foreign trades, this complex had become an identifiable district known as Mumtazabad, the queen's polis and contributed functionally to the maintenance of the Taj. On transfer of capital to Delhi, this was renamed as Taj Gunj and lost its original significance as a commercial spine of the Taj [7].

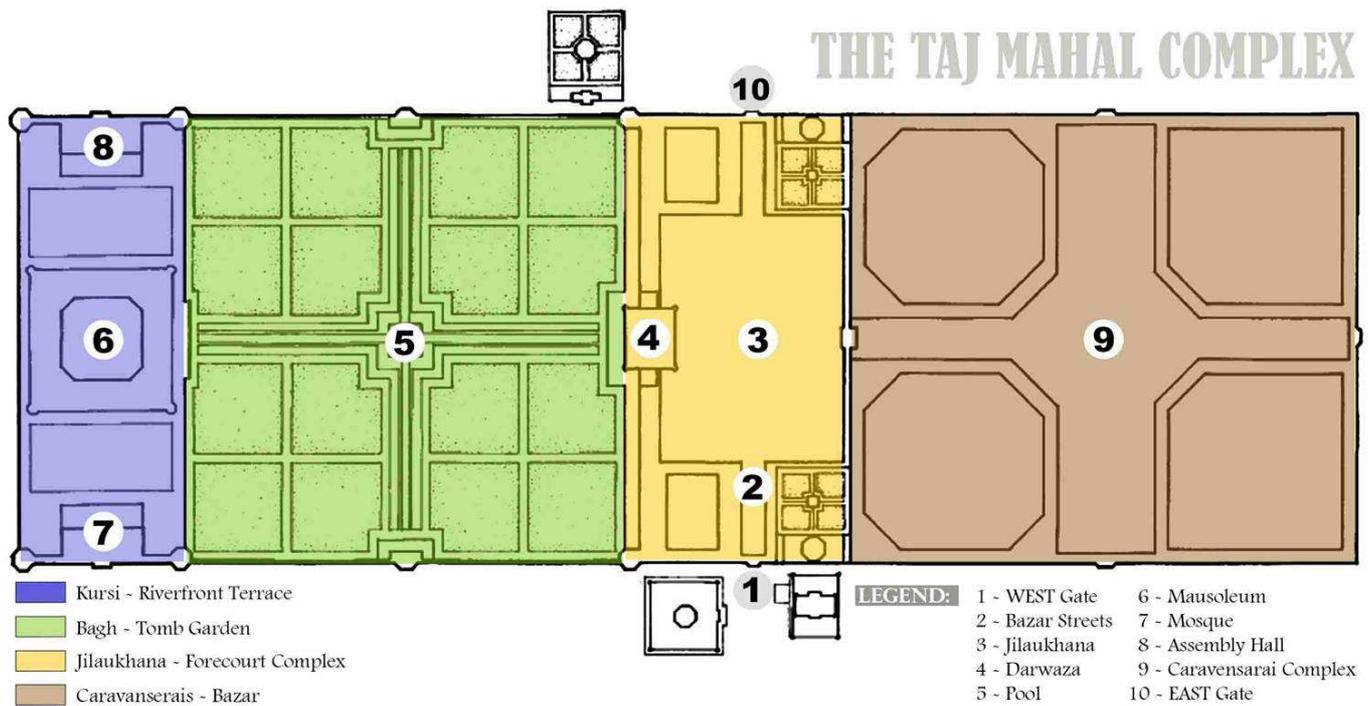


Fig. 2. The Taj Mahal Complex - elements

The Taj Mahal remains as the de-contextualized cultural icon whose forgotten dimensions undermine its deeper values as both monument and place [12]. In unearthing the buried attributes of the Taj Mahal, is to speculate more cryptic on its cosmos that epitomes its future complex and divine urban frames.

3 GORDON CULLEN PRINCIPLES EXPLAINED IN THE TAJ MAHAL VICINITY

“Group of buildings can collectively give visual pleasure which none can give separately. One building standing alone in the countryside is experienced as a work of architecture, but bring a half dozen buildings together and an art other than architecture is made possible. Several things begin to happen in the group, which would be impossible for the isolated building. We may walk through and pass the buildings, and as a corner is turned an unsuspected building is suddenly revealed. We may be surprised, even astonished with a reaction generated by the composition of the group and not by the individual building.” [13]

The Taj Mahal is considered to be the greatest contribution and manifested achievement within the whole range of Indo-Islamic architecture. The visionary as well as expertise presented by architects and horticultural planners of Shah-Jahan in manifesting the architectonic beauty with its rhythmic combination of mass and space, solids and voids, color and texture, light and shadow, form and volumes, tangible and intangible aspects of Taj Mahal reflexes the timeless experience and thus retains the imageability quotient of the visitor [14]. According to Cullen, the care taken while designing spaces especially acquainted with public realm and the implication of certain strategies in creation of such spaces results in retaining the enthusiasm throughout the journey of a viewer and also capable of creating an image map for a visitor. Sir Gordon Cullen postulated certain principles which ease the creative conscience of a visionary in creating image inducing urban parcels

concerning optics, place and content. Taj complex, an amalgamation of various elements of urban design such as buildings, landscape, material, water, texture, etc. publishes the image making sensitivity in a visitor's mind and ultimately exemplifies the profound reflectance of various Gordon Cullen principles.

3.1 CONCERNING OPTICS

3.1.1 SERIAL VISION

“Serial vision is a significant element in the cognitive and affective experience of the perception of a place. The visual perception of a pedestrian while walking in an urban setting at uniform speed results in the sequence of revelations of sudden contrasts in surrounding envelope of townscape, and certain snapshots [15] that shall be unfolded at every hierarchical instantaneous view frame in the journey, have a potential of becoming a series of image making impressions [13] on the perceiver's mind.”

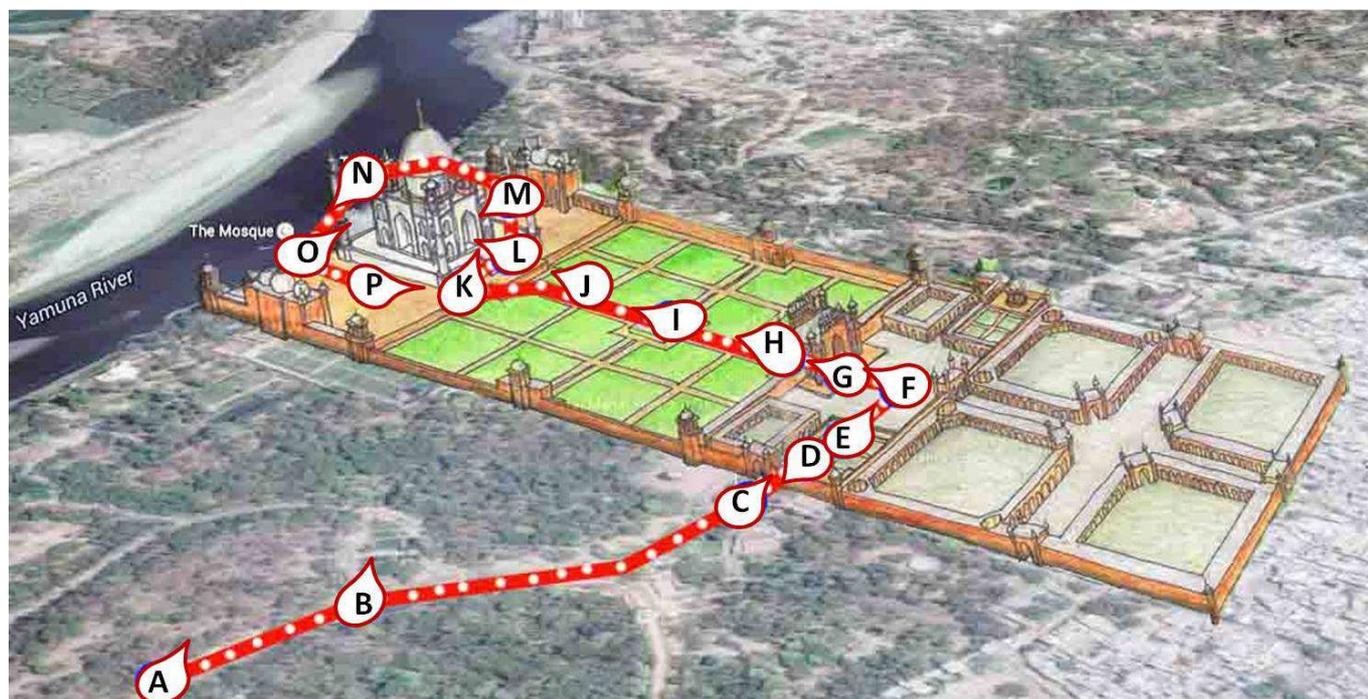


Fig. 3. The Taj Mahal Complex - serial vision

Taj Mahal complex with its well articulated spaces and appropriate zoning sub divisions retain the enthusiasm and complacency of a perceiver throughout the journey of the visit. The elements thus articulated have become potential participants in generation of mental map in a visitor's mind, not only as a picturesque glimpse but a series of imagery in progression (Fig. 3). The collective imagery quotient thus created results in framing a serial vision in Taj Mahal complex.

The moment a visitor arrives to experience the first glance of skyline of the Taj Mahal as one enters the proximate area in Agra city, intensifies a sense of enthusiasm for forthcoming exploration of the timeless architectural wonder (Fig: 4A & 4B).



Fig. 4. The Taj Mahal Complex - view frames at strategic locations (A-D)

A sense of discontentment and an emotion of catalyzed enthusiasm created in finding Taj as the marble mausoleum will not be in the visual perception of the observer although he enters Jiluakhana (Fig: 4D & 5E i-iv) and this commotion is continued for about ten minutes along the journey via the red sandstone colonnade and reaches the main gateway. (Fig: 6F)



Fig. 5. The Taj Mahal Complex - view frames at strategic locations (E)



Fig. 6. The Taj Mahal Complex – view frames at strategic locations (F-G)

The spectacular vision of Taj Mahal is revealed as one enters the main entrance pylon that yields the percipient a sudden sense of surprise (Fig: 6G) and intensifies the spirits. An uncompromised composition of Mughal garden in the foreground with a well balanced marble mausoleum at an appreciable distance (Fig: 7H) manifested with axial symmetry in plan and attained visual balance in articulation of architectural elements is comprehended.

A series of uninterrupted admirable frames of the Taj Mahal’s front views (Fig: 7I) is visualized as one walks towards it through the Mughal gardens [16]. A sequence of visual recordings, the revealing details and heightening grandeur could be perceived with the gradual sensing of increment in the scale of the main block (Fig: 7J).



Fig. 7. The Taj Mahal Complex – view frames at strategic locations (H-K)

A dramatic surprise is created as one reaches the base of podium (Fig: 7K) [17] on which the mausoleum was built. The visitor ought to take any of the two stairways from the basement to reach the terrace on which the main block was erected, and this is the spot where one cannot see the Taj Mahal again except a flight with series of risers through an inclined tunnel space. As one reaches the podium terrace a sudden revelation, explodes out with the available spectacular view frame of the unveiled master piece of marble stood right in front of one’s eyes (Fig: 8L).



Fig. 8. The Taj Mahal Complex – view frames at strategic locations (L-O)

The essence of aesthetic fabric of The Taj can be felt as one moves around it (Fig: 8N), achieved by the skillful application of optical correction entasis i.e., providing unnoticeable tapering towards up onto the building envelope for a structure of

monumental scale, resulting in a psychological consolation of structure not being crating a sense of overwhelming as one stands abutting the wall surface with its scale (Fig: 8M, 8N, 8O)

The resultant panorama, looking towards the entrance pylon (Fig: 9P I-ii) appreciated with a huge frontage of Mughal Gardens courtyard, from the podium creates a sense of closure. The color contrast of the lush green lawn with red sandstone "Iwan" creates imagery in one's mind.



Fig. 9. The Taj Mahal Complex – view frames at strategic location (P)

Contrast and balance thus created in scale, texture and spatial articulation boosts the sense of imageability of a visitor. The dramatic spatial configuration manifested by the then designers of Taj Mahal, without any theoretical framework, could be able to succeed in retaining the sense of emotional satisfaction as a resultant of serial vision, by only with the virtue of expertise in visualization and accuracy in planning.

3.1.2 EXISTING VIEW AND THE EMERGING VIEW

“The visualization and creation of designer in the articulation of solids and voids in devising walkable settlements can create the excitement in the journey of a visitor in an urban setting. A continuous long street with a certain character might result in boredom, but creation of courtyards, squares, plazas, piazzas, emphasizing nodes etc., increases the emotional sensitivity of the user. Finally a suddenly revealed monument [18] or an element adds surprise to the visitor.”

The sense of surprise and fulfillment retains as one enters the west gate (Fig: 4D) of the Taj complex that renders a straight path-way with flamboyant perspective of the red sandstone colonnade heading towards a hierarchically potential plaza (Fig: 5E), i.e. jiluakhana that accommodates the main gate perpendicular to the direction of movement onto the northern side (Fig: 6F), resulting in discontentment of visual connectivity of the Taj. The visitor shall not have a clue of the existence of the marble marvel monument while passing by with the spectacular scaling of fortification. The visitor shall be exposed to sudden exposure of the magnificent monument at far end through the dark archway of the pylon explodes a sense of amazement (Fig: 6G).

3.1.3 FOCAL POINT

“The visualization and creation of the designer lies in the optimum utilization and articulation of solids or voids in designing a central point of attention or interest or activity that acts as a landmark amidst the cityscape. Few of these focal points include entrance pavilions, sculptures, landscape features, tactile paving, Braille information boards, etc. that offer visual cues for the respective pedestrians, bikers, specially-abled users to orient themselves into the pathway.” [13]

The central square of jiluakhana (Fig: 6F) acts as a focal point and a potential node in the whole vicinity of Taj complex as it diversifies the whole area into specific zones (Fig: 10 i-ii) such as the Taj Mahal with char-bagh as Zone-1 (Private), Jiluakhana – housing two subsidiary tombs and accommodation for the tomb attendants as Zone-2 (Semi-public), the Taj Gunj – artisan bazaars with their respective work spaces and caravansarais as Zone-3 (Public). The exuberant marble mausoleum stands as a focal point amongst all, contrasting and complementing with its huge char-bagh garden, an envelope

of red sandstone structures of vivid scales (Fig: 10 v) [19]. A series of water fountains, altars, pools, sculptures all along the principal axes constitute an array of hierarchical focal points along the journey within the vicinity. [20]. (Fig 10 iv) [21].

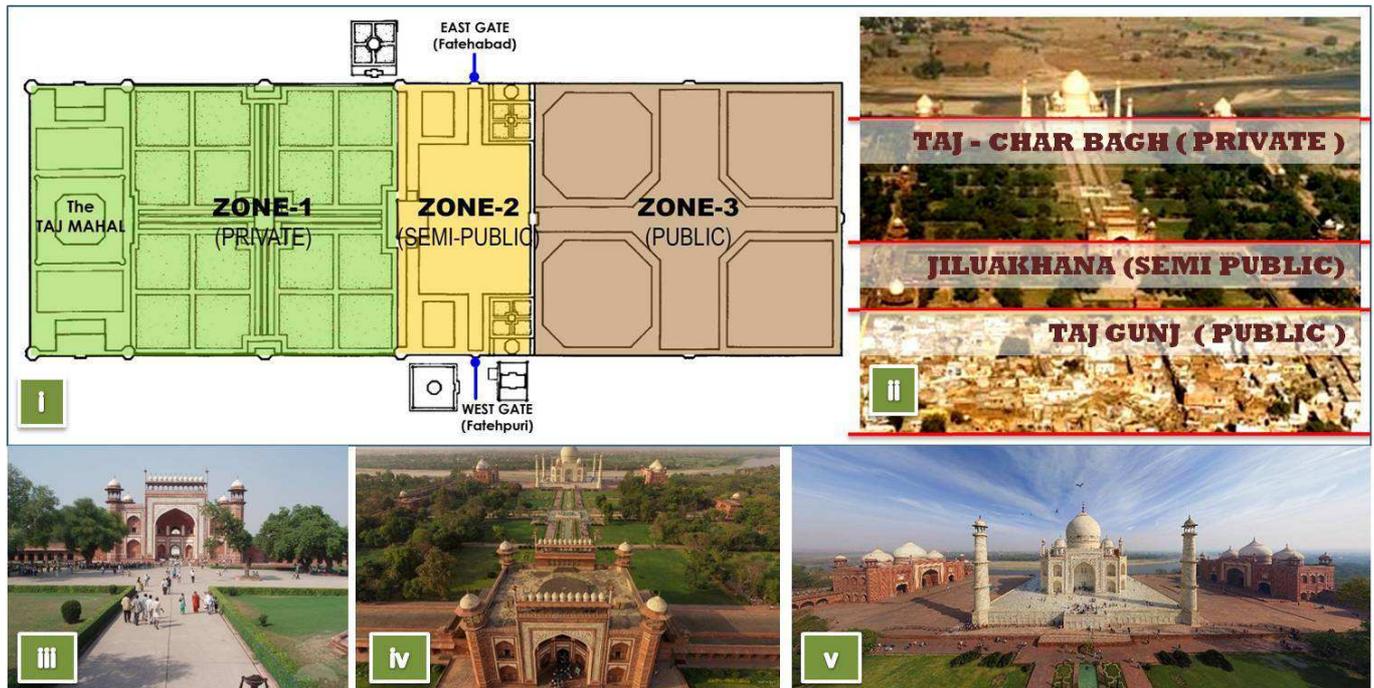


Fig. 10. Taj Mahal – Strategic Focal Points (Zone wise)

3.2 CONCERNING PLACE

3.2.1 CLOSER AND ENCLOSURE

“Closure is the breakdown of a continuous system of elements i.e. pathways, street network, etc. within a town into a more edible and ordered composition without perturbing the onward procession. The concealed life of private spaces created in between the built structures is paused without lessening the continuity of advancement beyond the obstruction. Closure is a mere play of shutting down a city’s environment creating a deviation to cityscape. Enclosure furnishes a complete secluded environment that is concentric, still and self-sufficient. A person feels that he is completely encircled with similar elements on procession through regression until a new aspect of design is disclosed that creates an abrupt surprise.” [13]

A set of variations in spatial character attained with respective physical attributes of enunciated design elements in the journey reflects a sense of closure. The street character with sandstone boulevard, as one enters the west gate (Fig: 4C) suddenly opens up to a huge square (Fig: 6F) in jiluakhana from where the observer is directed towards the main entrance pylon (Fig: 6G) i.e. south gate of the Taj. A visitor shall be assured a feel of awe with the revealed first look of the Taj from the pylon (Fig: 7-H) as one passes through the pylon closure. The viewer shall be explored to wide open Mughal Gardens (Fig: 7I) where the sense of loss of enclosure (Fig: 11 i) is experienced by the onlooker even though the subject is very much into a walled boundary. The principal boulevard with its linear waterbody along the axis with the reflection of the Taj at an intensifying scale provides a sense of pleasure. (Fig: 11 ii) [22]



Fig. 11. The Taj Mahal Complex – sense of enclosure; imagery reflection

3.2.2 HERE AND THERE

“The practical result of so articulating the town into identifiable parts is that no sooner do we create a HERE than we have to admit a THERE, and it is precisely in the manipulation of these two spatial concepts that a large part of urban drama arises.” [13]

A play of various spatial configurations influences the perceptual interface of a commuter throughout the journey of the Taj Mahal complex. The narrow street with stone colonnade (Fig: 4D) opens up into wider pockets (Fig: 5E), gradually transforming into a public square (Fig: 6F) accommodating the grand pylon through which all the visitors ought to enter the royal enclosure (Fig: 6G), which is also the spot of astonishment that provides the first glimpse of Taj Mahal (Fig: 7H) in its most appreciable frame with its immense foreground. The visitor shall feel the grandeur of space while walking through the Mughal gardens (Fig: 7I), simultaneously experiencing and appreciating the transformation of scale of marble mausoleum onto the huge basement (Fig: 7K), with gradual revelation of elements as well as the ornamental motifs of the Taj.

3.3 CONCERNING CONTENT

3.3.1 EXISTING FABRIC

“The human mind sensitively reacts to the surrounding environment when it perceives two images of vivid contrast (the street and Courtyard) simultaneously. The sense of space becomes more meaningful with the created drama of juxtaposition. Variation observed in spatial configuration, form, texture, color, etc. plays an important role.” [13]

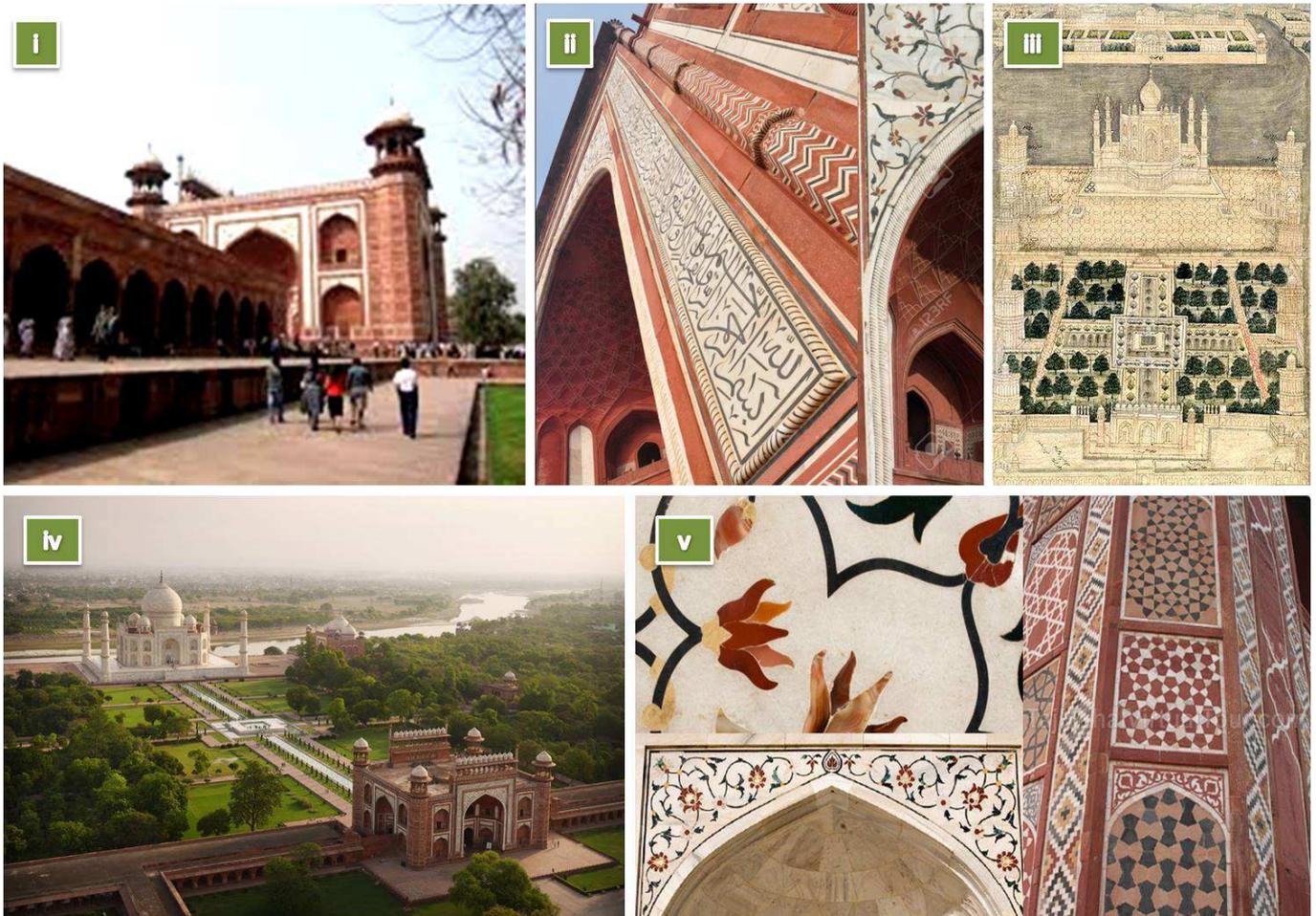


Fig. 12. The Taj Complex – fabric

The contrast in special configuration brings out the significance in serial vision, sense of closure and enclosure and other properties concerning optics. The sensitivity subjected in creation and balance obtained in the contrast, achieved by the specific selection, application of texture through material and color from macro to micro level spaces proves the exuberant visualization caliber of the then designers. The red sandstone corridor with monochromatic character and texture opens up to a square in Jiluakhana accommodating the great entrance pylon (Fig: 12 i) [11]. The Pylon with a well balanced composition of red sand stone obliterated with marble ornamentation motifs to the required extent (Fig: 12 ii) [23]. The elegance of the Taj is intensified with its lush green foreground, i.e. the char-bagh. Historians confess that the Mughal garden in front of Taj Mahal has been conceptualized and designed on the basis of description of a pleasure garden in 'Jannat' (the paradise) (Fig: 12 iii) [24], from scriptures of Holy Quran [25]. The actual marble mausoleum becomes the focal point within the vicinity among the group of other sandstone buildings on the riverfront terrace and its immediate surroundings with its striking contrast in color and texture (Fig: 12 iv) [11]. At micro level, the ornamentation motifs thus created onto various serene white surfaces of the Taj Mausoleum can be clearly noticed and appreciated with Pietra-Dura work (Fig: 12 v), an efficient hard-stone craftsmanship, colorful stone pieces and precious gems efficiently embedded into the intricate motifs.

3.3.2 SPACE AND INFINITY

“The infiniteness of the sky cannot be felt as one observes a clear sky from rooftops or open grounds, as effective as a dramatic visual sense of infiniteness in the sky that can be felt by a human brain as one perceives while walking, or looking sky in the backdrop of a building or a part of it.” [13]

The sense of infinity is evident as one looks at The Taj Mahal from its entrance pylon (Fig: 7H) against its picturesque backdrop of River Yamuna and lush green vegetation.

The visual impression one obtains while standing right in front of the entrance pylon and appreciation of the first glance of the Taj Mahal with its blue sky and green foreground via the immediate archway within the frame captured exemplifies

the sense of infiniteness. The same feel of infiniteness shall be attained while appreciating the Taj from a distance in char-bagh (Fig: 13 i), i.e. from the Mosque sharing the same terrace on which the mausoleum housed (Fig: 13 iii).

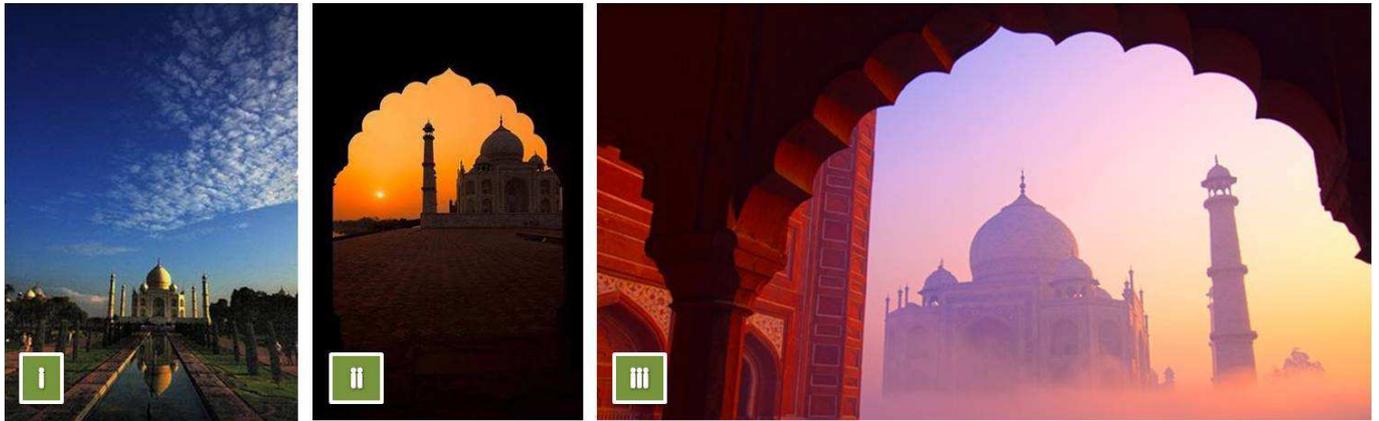


Fig. 13. The Taj Mahal – Character of Infiniteness

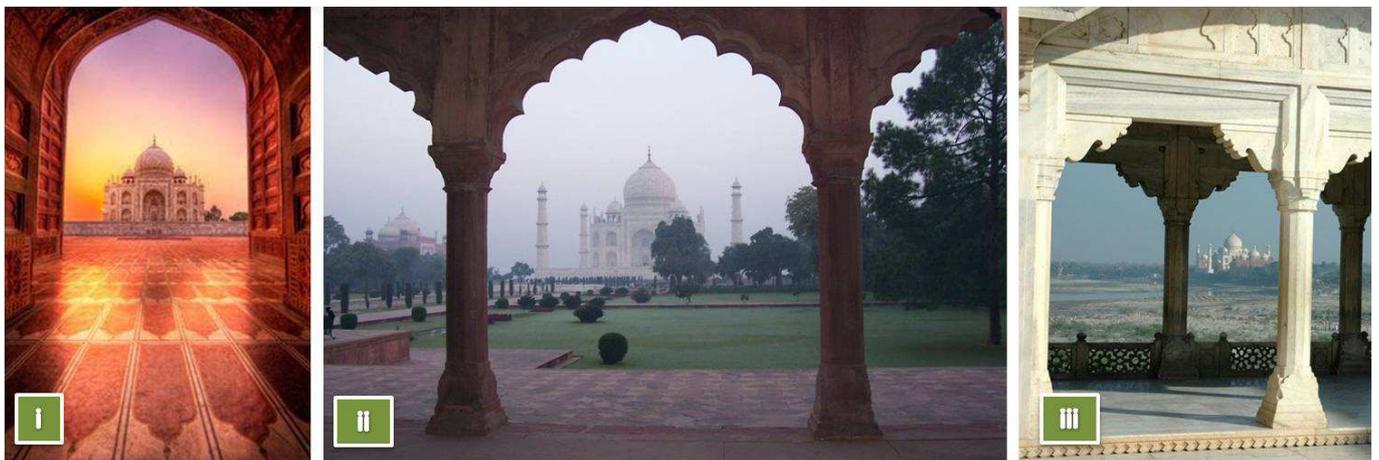


Fig. 14. Appreciating Taj from variety of spaces

The same sense of space and infiniteness shall be achieved with the due observation and appreciation of the Taj Mahal from any enclosed or semi open pavilions within the vicinity and surrounding distant vistas (Fig: 14 i-ii) [26] (Fig: 14 iii).

4 CONCLUSION

The timeless impression on the mind of a visitor, shall be achieved by the articulation of spaces and masses for a given context and content, right from the level of designing an urban settlement at macro level to the configuration of elements within the buildings at micro level detailing. Discussed case example hence forth concludes that, designing of urban level spaces with due accentuation of various elements of urban design such as buildings, services, landscape, materials, finishes, network systems, etc., by the implication of respective principles and sensual visualization results in the creation of image making vicinities [27]. Architectural elements such as cantilevered balconies, porticos, canopies, trees, cross section of roads, storefronts, recessed entries, courtyards, projecting signage's, etc. all contribute to a change in the monotonous long views. Experiencing such elements in a journey will provide the users with a positive feeling and feedback in order to anticipate their upcoming visits [15]. Designs would prove useful in restoring body and mind, and calling the soul to higher spirits for a sweet minute amidst the hurly-burly of a big town. The urban design should give us a real experience of a place, anyone who ever walked the streets should feel that there is something in the buildings and monuments themselves that apprehends the attention and takes one out of the everyday twiddle. The contemporary sophisticated developmental strategies henceforth with all the available postulations and implied successful design theories are in virtue of manifesting effective imageability concerns along with comfortable environment.

REFERENCES

- [1] Moughtin, Cliff. *Urban Design, Street and Square*. Oxford : Architectural Press, 2003.
- [2] Beucker, Nicolas and Bruder, Ralph. *The emotional townscape – designing amiable public places*. Essen : University of Essen.
- [3] M., Ganis, J., Minnery and D., Mateo-Babiano. *Masterplanning for urban change: a small world metaphor*. Queensland : University of Queensland, School of Geography, Planning and Environmental Management.
- [4] Michael, Pauls. 034 serial vision, surprise and closure. *www.recivilization.net*. [Online] [Cited: December 26, 2015.] <http://recivilization.net/UrbanDesignPrimer/034serialvisionsurpriseclosure.php>.
- [5] Kasprisin, Ron. *URBAN DESIGN the composition of complexity*. London & New York : Routledge: Taylor & Francis Group, 2011.
- [6] Koch, Ebba. *The Complete Taj Mahal*. 2008.
- [7] Brown, Rebecca M. and Hutton, Deborah S. *A Companion to Asian Art & Architecture*. Malden : John Wiley & Sons Pvt. Ltd., 2015.
- [8] Begley, Wayne. The Myth of the Taj Mahal and a New Theory of its Symbolic Meaning. *Art Bulletin*. March vol.61, no.1 1979, pp. 7-37.
- [9] Bulmahn, Wolschke. *The Garden of the Taj Mahal: A Case Study of Mughal Architectural Planning and Symbolism*. Wescoat : s.n., 1996.
- [10] Desai, Z. A. *Taj Mahal: The Illuminated Tomb: An Anthology of Seventeenth Century Mughal and European Documentary Sources*. 1989.
- [11] Orland, Brian, et al. Taj Mahal Cultural Heritage District Development Plan. *American Society of Landscape Architects*. [Online] 2002. [Cited: December 12, 2015.] www.asla.org/meetings/awards/awds02/tajMahal.html.
- [12] Fairchild, Ruggles D. "A Garden in Landscape" *Islamic Gardens and Landscapes: Penn Studies in Landscape Architecture*. Pennsylvania : University of Pennsylvania Press, 2007.
- [13] Cullen, Gordon. *The Concise Townscape*. s.l. : Architectural Press, 1961.
- [14] UNESCO. UNESCO: Culture: World Heritage Centre: The List: World Heritage List- Taj Mahal. <http://whc.unesco.org>. [Online] 1992-2016. [Cited: April 12, 2016.] whc.unesco.org/en/list/252.
- [15] *Serial Vision: Storyboards In The Design Studio*. Rene, Davids. Berkeley : University of California. 87th ACSA Annual Meeting. pp. 239-245.
- [16] George, Michell and Pasricha, Amit. *Mughal Architecture and Gardens*. s.l. : Antique Collectors' Club, 2011.
- [17] www.alex-aroundtheworld.com/India/html/taj_Mahal. *www.alex-aroundtheworld.com*. [Online] 08 2011. [Cited: 05 12, 2016.] http://www.alex-aroundtheworld.com/India/html/taj_Mahal.html.
- [18] Gibbons, Andrea. Gordon Cullen's Concise Townscape. <http://writingcities.com/>. [Online] November 10, 2015. [Cited: January 16, 2016.] www.writingcities.com/2015/11/10/gordon-cullens-townscape/.
- [19] Caters. stunning-drone-photographs-of-the-new-seven-wonders-of-the-world. *www.catersnews.com*. [Online] caters, 2016. [Cited: May 12, 2016.] <http://www.catersnews.com/stories/amazing/stunning-drone-photographs-of-the-new-seven-wonders-of-the-world/>.
- [20] Koch, Ebba. *The Taj Mahal: Architecture, Symbolism, and Urban Significance*. Vienna : Institute für Kunstgeschichte, University of Vienna.
- [21] The History of Love symbol Taj Mahal Agra. *www.loyaltoursindia.in*. [Online] Loyal Tours India Blog, 2016. [Cited: may 15, 2016.] <http://www.loyaltoursindia.in/blog/the-history-of-love-symbol-taj-Mahal-agra/>
- [22] Reflections of Taj Mahal. *www.panoramio.com*. [Online] Panoramio, Google Maps. [Cited: May 13, 2016.] <http://www.panoramio.com/photo/53009554>
- [23] Islamic Calligraphy on The Main Gate at the Taj Mahal. *www.flickr.com*. [Online] flickr, a yahoo company, 2016. [Cited: May 11, 2016.] <https://www.flickr.com/photos/crumblindown/6723135005>
- [24] Taj Mahal. *schools-wikipedia.org*. [Online] wikipedia, May 5, 2016. [Cited: May 14, 2016.] http://schools-wikipedia.org/wp/t/Taj_Mahal.htm
- [25] Tillotson, Giles. Taj Mahal. *Harvard University Press*. 2008.
- [26] Agra Taj Mahal 09 Taj Mahal Framed By Pillars Of Darwaza Great Gate Just After Sunrise . *www.mountainsoftravelphotos.com*. [Online] September 09, 2011. [Cited: May 12, 2016] <http://www.mountainsoftravelphotos.com/India/Agra%20Taj%20Mahal/slides/Agra%20Taj%20Mahal%2009%20Taj%20Mahal%20Framed%20By%20Pillars%20Of%20Darwaza%20Great%20Gate%20Just%20After%20Sunrise.html>
- [27] Roberts, Blake. Serial Vision: The Dynamic Downtown. <http://www.haugebrueck.com>. [Online] April 17, 2012. [Cited: January 17, 2016.] <http://www.haugebrueck.com/blogs/downtowns-plus/serial-vision-dynamic-downtown>.