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A Formulate Approach to Studying Visual Perception of Urban Landscape with a Cultural Context: A Case Study of Kumartuli, India

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Abstract

The visual perception that ties one's experience to an urban place can be broadly classified into some built structures and landscape elements. This research aims at critically analyzing the visual perception of an urban place considering the landscape features. To study the visual perception of an urban place, the urban place can be analyzed in terms of both urban design parameters and visual communication design parameters. From the point of view of urban design parameters, an urban place consists of both physical and non-physical aspects. Physical aspects include both macroscopic aspects of landform and nature as well as smaller details of street furniture, illumination, etc. Non-physical aspects involve semiotics. At first, the existing conditions of the different urban parameters are documented. On the basis of visual communication design parameters like image, typography and semiotics, these urban parameters are analyzed. Now, to test how these inter-relationships between urban design parameters and visual communication design parameters affect the human emotions regarding the visual perception of an urban place, case study of urban place was done in Kumartuli, a clay idol maker-based community in Kolkata, India. Data from the primary interview with the clay idol makers provided us data which suggests the future aspirations of people for the urban parameters. It was noted how much the general principles deduced from the inter relationships through literature review can be applied to a specialized community like that of Kumartuli. From this, some principles which remain same over cultural differences and some that deviate from the same are derived.

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1. Introduction

Kumartuli in Kolkata, India was chosen as the site to be studied. Kumartuli is a neighborhood in Kolkata which is so rich in its artistic heritage that it attracts tourists and photographers worldwide. It is a village for clay idols makers in the middle of a city like a cultural oasis. The streets of Kumartuli are very unique as one can see clay idols in their different stages of making placed on either sides of the street. The streets resemble a much rural and raw version of a museum of the tradition of clay idols of Hindu gods and goddesses. Thus, if one had to redesign the streetscape of such a community it would never be the same as that of any ordinary city street. The different urban parameters have been studied for the marked streets and nodes and a questionnaire interview was done with the local people for better understanding.

2. Research methodology

Let us name the parameters for better understanding,

> U- [Urban Place]X- [Urban Design Parameters]Y- [Visual Communication Design Parameters]A- [Future aspirations questionnaire from local]B- [Impact of sculptor lifestyle in present conditions]

Steps of research:-

> (Since, X is intrinsically related to U it was redundant to prove this relation.)

Step 1. Critical analysis of existing condition of X and what principles are applicable from the generalised X and Y inter-relation (X and Y inter-relation is established from literature review) is done.

Step 2. How much the results from A differ from guidelines derived from literature review is noted.

Step 3. B is the overall conclusion of findings acquired from this research.

3. Site

3.1. Location

The Kumartuli region has been marked below in Figure 1 to show its location within Kolkata. The streets that have been studied as well as the nodes have been shown in Figure 2. The analysis-based study has been done of these marked streets.

3.2. Built structures characteristics

All the buildings range from one storey to up to four storeys. The buildings nearest to the streets where clay idol makers have to keep their clay idols to dry generally range between one to two storeys. The structures are mostly studio spaces or commercial with very few residential in nature [1] (Figure 3).

3.3. Vehicular access

Only two and three wheelers can access the marked roads but the streets are mostly accessed by pedestrian and hence no separate footpath is there for pedestrians in most stretches of the streets.

4. Urban parameters of the streetscape

4.1. Plants

4.1.1 Existing conditions

Rarely any vegetation is there which results in the streets having no shade other than that of the structures on the sides. One of the reasons for lack of shade is so that the clay idol makers have enough sun to dry the idols. But in scorching heat of summer, the lack of shade creates a very unpleasant perception of the place to a

Figure 1. Location of Kumartuli

Figure 2. Streets studied

Figure 3. Land use pattern [1]

Figure 4. Tree visible in a node

Figure 5. Tree visible in another node

non-worker. The lack of greenery also makes the clutter of the half done sculptures, straw figures, benches, wooden planks, raw materials, etc. on the sides of the street look more chaotic. The Figures 4 and 5 show two of the sparsely found trees in the locality.

4.1.2 Literature review

Image–

Elements:

Green and red trees are preferred while purple can be both preferred and disliked .Orange-brown coloured trees are mostly disliked [2]. Blue-coloured trees are perceived to have the highest strength [3]. Pyramid-formed trees are preferred most [3].

Principles:

Time for visual perception of each plant takes minimal scrutiny and time depending on the unique visual characteristics of the plant [4]. Well-spaced trees are preferred over dense vegetation or large expanses of monotonous undifferentiated land covers [5]. Good tree spacing reinforces human scale by providing a sense of cohesion, rhythm and street definition [6]. Continuous canopies of mature trees while providing visibility of quality historic or significant architecture is encouraged [6].

Meaning:

Vegetation can be used to produce mystery in a place [5].

Semiotics–

Semantics:

Xeriscaping should be avoided [8]. Trees contain perceived symbolism [7] which can be utilized to perhaps enhance the cultural significance of Kumartuli.

Syntactic:

Landscape with trees is preferred more in an urban context [9, 10]. Familiar vegetation biomes were preferred highest [5]. Preferred vegetation patterns in a landform include clarity of edges and should not obstruct preferred visibility [11].

Pragmatics:

Personal characteristics are effective on preferences of tree forms and colours [3].

4.1.3 Future aspirations

— Q: Should there be more trees?
A: Not preferably except for the sole purpose of decorative shrubs;

— Q: What kind of trees would you prefer in this locality?
A: Low height of around 5 to 6 ft. height;

— Q: What spacing?
A: 5-6 ft;

— Q: How should the trees adapt with seasons?
A: Flowering shrubs are preferred;

— Q: What kind of tree colour?
A: Green;

— Q: What should be the size of canopy?
A: Trees are preferred to be smaller with no such opinion on the foliage size of shrubs but tall trees with large foliage are highly discouraged since the sculptors need the sun to dry the clay idols and shade from trees can be a major threat to their profession;

— Q: What is the preferred form of canopy?
A: Not much response was acquired in this aspect.

4.2. Paving

4.2.1 Existing conditions

Asphalt paving is there with poor drainage lacking any properly well-defined drainage channel. In the monsoons or the rainy period (where annual rainfall occurs around 1640mm) [12], the streets get muddy and often water logged making the entire place unhygienic.

4.2.2 Literature review

Image–

Elements:

The colour of paving material influences function of space [13], hence the colour should be chosen wisely.

Principles:

Colour, pattern, rhythm are principles for a good paving design [14]. The complexity of pavement design helps to connect elements of an urban place across different scales. Different levels of design helps in hierarchical thinking [15].

Meaning:

Paving patterns contents meaning in some abstract sense [15].

Semiotics–

Semantics:

Pavement designs engage spectators to any place involuntarily. Regular pavement designs help spectators to perceive order amidst chaos [14].

Syntactic:

Pavement Patterns have a visual influence on the pedestrian walking behaviour [16]. Dynamic or harmonic paving designs makes us more aware about our surroundings [14].

4.2.3 Future aspirations

— Q: What kind of paving could there be if it were to be changed?
A: Plain cement concrete should be used for its durability, economy and simple plain visual appearance thus not stealing viewer's attention from the clay idols kept on the streets;

— Q: What kind of pattern or scale or rhythm?
A: Since paver blocks are not preferred by the community people there was not much response about this aspect;

— Q: Will you prefer regular paving patterns or irregular ones?
A: Regular paving patterns are preferred more since the irregular patterns may turn out to distract the customer's attention.

4.3. Built landform

4.3.1 Existing conditions

There are no perceptible undulations in the road surface, with structures mostly between G and G+1 height on both the sides of the street. The street widths vary from one to another. The widest places found are at the nodes (Figures 6, 7, 8 and 9).

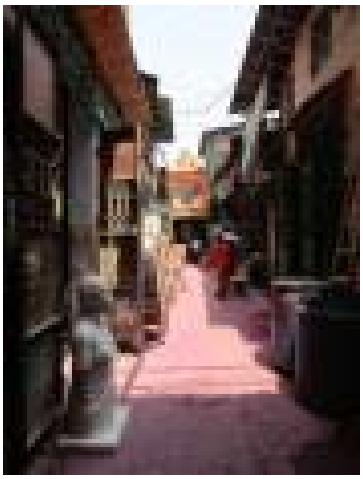

Figure 6. The narrowest roads lead to the idol maker's studios

Figure 7. Comparatively wider roads

Figure 8. Roads widen towards the nodes

Figure 9. Road width maximum at nodes

4.3.2 Literature overview

Image–

Elements:

There is a cross-cultural similarity in preferences in favour of landscapes with natural styles. Landscapes with rectangular or formal designs are less preferred.

Principles:

Homogenous ground texture, medium to high levels of depth, presence of a focal point, and moderate levels of mystery leads to high level of preferences in natural scenes. Complexity influences positively in the visual preference of a landscape. Preference of modernity and novelty is more among rural residents [5].

Semiotics–

People prefer novelty to familiarity. Younger people prefer novelty and others familiarity. "Different cultural identities and status categories influence the ways in which people experience and understand their environments" [27].

4.3.3 Future aspirations

— Q: Would it be better if surrounding buildings were higher or lower?
A: Present height is satisfactory;

— Q: Should street width be narrower or wider?
A: Wider is preferred, around 24 ft. minimum;

— Q: How much vegetation should landform consist of?
A: On a static image of any street of Kumartuli, the area of the image covered by the vegetation should consist more than half that of the built structures.

4.4. Signage

4.4.1 Existing conditions

The streets are cluttered with various kinds of signage of shops, street signs, etc., which are not well-kept; thus disrupting the beauty and elegance of such a heritage land.

4.4.2 Literature review

Image–

Elements:

Straightforward, uncomplicated, and colour-coordinated signage and graphics receives a positive rating, but more conventional signage in an otherwise positive context will also receive a positive, although lower, positive rating [17]. Signage or graphics on conventional support structures that appear flimsy or with sharp edges are rated negatively. Signage or graphics that are not well kept, with a complicated variety of colours and shapes are rated negatively [17].

Meaning:

Signage may reflect the artistic nature of a village [18].

Typography–

Typography with symbol used due to limited literacy [19]. Size of lettering should be appropriate and in relation with distance from viewer and in using smaller sized signs, however care should be taken that they meet the needs of partially sighted people and conform to the guidance in inclusive mobility [18].

Semiotics–

Semantics:

People's orientation and navigation through space can affect their quality of life. Sense of orientation helps people to feel confident and less anxious [5].

Pragmatics:

Signage helps as a part in the overall perception of a place [20]. An injunctive-proscriptive message was twice as effective in guiding the movement of people as a descriptive-prescriptive message [21]. How individuals perceive different types of signage can be understood by the Figure 10 and 11 [22].

4.4.3 Future aspirations

- Q: What kind of characteristics should signage have?
  A: Straight forward, uncomplicated, and colour-coordinated signage and graphics;
- Q: What is the preferred design genre?
  A:Face of deity/ idol;
- Q: What characteristics are recommended for the typography?
  A: Formal, bold, bright colours.

4.5. Advertisement

4.5.1 Existing conditions

The sculptures that appear alongside the streets of Kumartuli act as advertisements for the workmanship of sculptors. This is the primary basis of attracting customers for buying the idols. Other than this other advertisement board which are seen scattered around the streetscape lack in aesthetic qualities (Figure 12).

4.5.1 Literature review

Image–

Elements:

Some colours such as red and yellow are helpful in creating hypnotic effects. This is exemplified with the dominant red colour of Coca-Cola advertisements.

Meaning:

Animals can also be used as symbols. For example, Coca-Cola uses the white polar bear as a symbol of freshness and to emphasise that its drink can be consumed at a very low temperature [23].

Typography–

Another important point for effective advertisement is that the advertisement texts should be legible which depends on text's language (used easy readable and understandable letter types) However legibility is not enough alone for the message's reach effect, the consumer should feel interest [24]. New and innovative images and texts are encouraged. The translator should also be familiar with the ideological and cultural background of the target setting. For example, in Arabic countries, it is not acceptable to talk about intimate matters in advertising texts. Similarly, in Islamic regions, the use of the word pig in a food campaign may weaken the campaign.

Semiotics–

Visual elements carry many connotations as they portray what the user will be like or look like when using a given product. "The higher the number of connotative chains generated, the greater is the likelihood that the product will appeal to consumers" [23].

Semantics:

Marketing campaigns can be promoted using communication and interactive advertisements as a tool [25]. Visual clues are given for engaging the customer with the design of the advertisement.

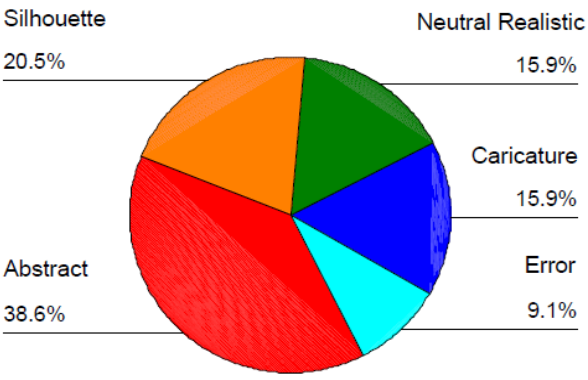

Figure 10. Preference of design genre

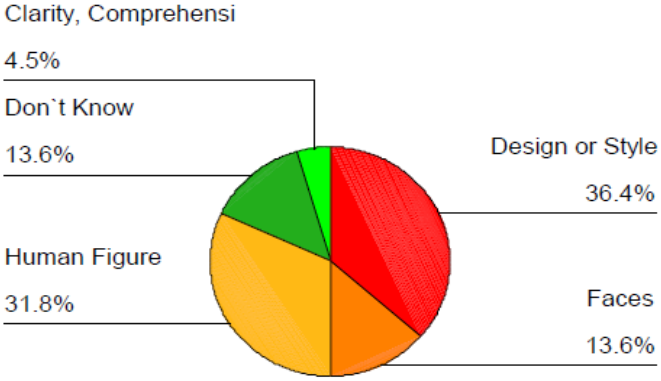

Figure11. Rationale for sorting ofsymbol cards

Figure 12. Example of lack of maintenance of advertisements

customer with the design of the advertisement. Advertisements that have double coded meaning to it are preferred more. The perception of an advertisement changes with the use of language and the cultural background of the location [26].

Syntactic:

Sometimes, the grammar of verbal communication is reflected in the process of communication through advertisement [27].

Pragmatics:

Past experience acts as poetic function of communication in advertisement [27]. A given advertisement that may work in a poor country may not work in a developed country. Similarly advertising texts are highly culture-oriented, and linguistic and stylistic preferences differ from one place to another [23]. A translated advertisement should reflect the ideology of the place and time, where and when it is produced [23].

4.5.2 Future aspirations

— Q: What colour scheme should be used for advertisements?
A: Bright, vibrant;

— Q: Should any symbolic meaning of the place be transferred through the advertisement for localization?
A: Yes, It is preferred;

— Q: What kind of typography characteristics should be used?
A: Bold, formal, straight forward font style, written in both English and Bengali.

4.6. Street furniture

4.6.1 Existing conditions

The most common street furniture include street lamppost, veranda of the houses, benches for workmen, etc. out of which none are maintained or well kept.

4.6.2 Literature review

Image–

Elements:

There are bird feeders, water spouts, street light poles and the chaupal / veranda: the raised platforms outside the houses, for general seating purposes - these are styles of street furniture we often see here on the streets of India [28].

Principles:

Sometimes if the street furniture is made to merge with the urban scene, the result may not coincide with the user's demands [29].

Semiotics–

In Adelaide's Rundle Street Mall, narrow width, clustered seating and lack of vehicle access provide it with a more intimate ambience [30]. Visual rigidity of street furniture should be taken care of to promote dynamic interaction between an individual and the surrounding [31]. The correct setting of the furniture in thoughtful and appropriate manner can enhance the outdoor area and thus people can get attracted to these areas [28]. The design of street furniture should ideally be integrated into the overall appearance of a street [18].

4.6.3 Future aspirations

— Q: What more street furniture is required for it to look better?
A: No more benches should be there as it may promote too much social interaction which can stall the idol maker's devotion to work.
However, bigger dustbins, properly maintained street light posts would be preferred;

— Q: What style of benches/ other street furniture?
A: Modernist street furniture is preferred;

— Q: What colour should they be of?
A: Metallic or other colours that depict a modern theme.

4.7. Colour scheme

4.7.1 Existing conditions

There is no proper colour scheme followed in the streets. Old Kolkata style homes with red walls and green windows give a traditional theme while slums have grown up all around the streets (which houses the studios of the talented artisans) with the streets crowded with grey clay idols and straw frameworks. There are also some abrupt modern developments of apartments, etc. which have no regards for the heritage of the site. The overall visual appearance created thus lacks any definite pattern of a colour scheme.

4.7.2 Literature review

Image–

Elements:

One of the most important factors concerning the image of a city is the colour [32]. Different colour schemes have been followed in some old cities [33] to maintain a continuity of the context. Colours can be classified by time-

– Permanent colours, semi- permanent colours, temporary colours.

Types of colours in an urban scene on the basis of materials are: natural colours, artificial colours or cultural colours and non-specific [32].

Principles:

Harmonious and perfect colour scheme will motivate people's psychology of beauty and kindness, thereby arousing people's psychological and visual excitement and emotional resonance. Colour can also adjust the proportion of landscape modelling and play an important role in making good for deficiency and setting off artistic characteristics of modelling by contrast [34].

Semiotics–

Semantics:

It is a visual element with the most expressive force and infectivity. To some extent, colour even has stronger impact and attraction than the form of an object or a building [34]. The inhabitants of Warsaw, desiring to reconnect with the past, felt the need of rebuilding the old town keeping the previous colour. In Tokyo there exists "colour riots", because of the excessive chromatics and the dynamic advertising. On the other hand, cities of China or of the United Arab Emirates, in their desire to display the technological and economic success, turn to colours able to support this message and attract attention [32].

Syntactic:

Similar result can be acquired from both natural and artificially coloured objects [35]. Importance of colour will change with the scene considered in any landscape [35].

Pragmatics:

Carefully coordinated colour contributes to city's identity "beyond the buildings, people, spaces, and artefacts that make up the city: not alone does colour give meaning to cities but cities give meaning to colour" [36].

4.7.3 Future aspirations

— Q: What will be the colour choice w.r.t time?
A: The permanent colours should be bright depicting the colourfulness of such an artistic community;

— -Q: What will be the colour choice w.r.t. material?
A: Metallic colours are preferred;

— Q: Should earth tones and shades of greens be used to compensate for the lack of vegetation?
A: No, if natural colours are required, actual vegetation should be used instead of using such artificial means;

— Q: Should traditional colour scheme of north Kolkata of red houses and green windows be used?
A: Modern colour scheme is preferred over traditional colour scheme.

4.8. Sculpture and art

4.8.1 Existing conditions

Sculptures in different stages of construction are kept outside the shops, encroaching upon the streets for proper drying of clay for unfinished sculptures as well as to sell finished idols by displaying them on the streets.

4.8.2 Literature review

Semiotics–

Semantics:

Public art is used to enhance an urban place by adding semantic value. Arts can be used to re-semanticize or subvert the dominant meanings of spaces or buildings. Examples from the Polish-born artist Krzysztof Wodiczko illustrate this potential. A large part of Wodiczko's work has involved projections onto well-known monuments with the intention of either emphasizing the problematic ideologies they commemorate or inverting their symbolic meanings. Wodiczkohas, for example, projected the image of a missile onto Nelson's column and images of homelessness onto Boston monuments. James Peto has argued of the latter: Krzysztof Wodiczko's Homeless Projections of the late 1980s question the perceived meanings of architecture and give new significance to the monuments of city streets and those who live in their shadows [37]. "A good environment sculpture makes each person that appreciates it fully indulge in its rich culture atmosphere, from which they can feel the real art and the beat pulse of this city; it is able to adjust the colour of cities and regulate the people's mentality and the visual experience, being perceived as a piece of "oasis." The visual awareness of the public of image shapes in environmental sculpture is not just knowledge of sculpture itself, but also the cognition of the surrounding environment. Through the interpretation of visual information of the environment sculpture, the public cognizes environment and therefore, achieve the cognition and communication of the urban space environment" [38].

Pragmatics:

Past experience and public art are connected by design: "Public art is cited with the ability to replace a quality that has vanished from a place or has been ignored; this is achieved, it is argued through commemoration of events or aspects of local history " [37].

4.8.3 Future aspirations

— Q: What kind of display? Figure or columns or abstract?
A: Human figure statues should be there, not columns or abstract;

— Q: What colour scheme of sculptures should be there?
A: Different types of colour schemes should be used in a carefully integrated way, to cater for all kinds of viewer's preferences;

— Q: What spacing should be followed for the display arrangement?
A: Very close spacing should be there as these clay idols are the symbol of the community.

4.9. Illumination

4.9.1 Existing conditions

Most clay idol makers being poor have to work under the street lamps. The street lamps have a yellow tinge to the light. As a result the same colour on an idol looks different under sunlight and at night. This makes it next to impossible for the idol makers to do any painting job at night and their profession suffers heavily.

4.9.2 Literature review

Image–

Elements:

"In summary, there are 4 main design parameters for artificial lighting design, which would result in different appearance of the lit environment and any misapplications might affect the quality of the lit environment. These features are namely Glare, Distribution, Colour Temperature and Colour Rendering index. To simplify the different design techniques employed in lighting, there are basically 2 types, direct lighting and diffused. Direct lighting could be translated as the highlighting of chosen object in space, structuring the visual environment, resulting in focal points and sharp shadows. On the other hand, Diffused Lighting is used for general lighting of the environment, with even Illuminance. On the other hand, Colour Temperature of lamps would influence on the choice of the lamp, if illumination of specific colours is required. For example, blue and green objects should not be illuminated with thermal radiator lamps, as the reddish inclination of the emitted light rays would subdued the actual colour of the object, rendering it greyish. However, if these colours were being illuminated with daylight white fluorescent lamps, it would appear better, despite the fact that the colour rendition of fluorescent is lower than incandescent lamps" [39].

Principles:

In the initiation of artificial lighting design, 3 concepts of lighting were introduced, namely, general lighting, focal glow and play of brilliance. These 3 concepts summarized the importance of artificial lighting in the structuring of the visual environment. "General Lighting" was understood as the provision of sufficient lighting for general purposes, which was also termed as "ambient lighting". "Focal Glow", however, introduced

concept of visual hierarchy into lighting, by the highlighting of "relevant visual information" using higher intensity lighting, or differed lighting technique, for the intended object to be brought into focus amid the generally lit environment. "Play of Brilliance" meant that artificial lighting could enable the conveyance of visual information and evoking intended spatial mood. Therefore, these basic concepts behind qualitative lighting had detailed how artificial lighting could visually structure space, offering a kaleidoscopic range of possibilities on how lighting could relate to architecture and space, while addressing to the "perceptual needs of the users of the space" [39].

Semiotics–

Semantics:

Street perception is significantly enhanced by lighting [40]. Lighting helps in shaping people's behavior [41].

Syntactic:

With the rate of illumination the sense of security is highly related. With higher degree of public lighting people feel safer [42, 43].

Pragmatics:

With optimized use of brightness, the preference of urban place can be increased. So a brightness emphasis that helps to make sense of an environment increases its coherence, making it a more pleasant space[44]. This principle may be used for highlighting the clay idols.

4.9.3 Future aspirations

- Q: What colour of lighting should be used?
  A: Pure white light with CRI as close as possible to sunlight;
- Q: What principle of lighting should be used?
  A: Three layers of lighting should be there, street lights for diffused lighting, lighting for the studios or shops and task lighting above the clay

5. Conclusion

Plants: There should be no tall trees, only bushes or other decorative use of trees. Green trees are to be used which would make up a large portion of the streetscape.

Paving: Plain cement paving is to be used in order to prevent the shifting of focus from the sculptures.

Built landform: Wider streets are preferred more than present conditions and modern theme for the overall streetscape is to be maintained.

Signage: Well kept, straight forward, color coded, bright bold signs are to be used with legible texts in both English and Bengali.

Advertising: advertising for companies should have some sensitive approach while placing their campaigns in Kumartuli. It should somehow connect to the culture and art of the place through design.

Street Furniture: No need for benches(on contrary to the suggestion of societal spaces by the literature review) but bigger dustbins and sturdy light posts with a modern outlook would give the street a refreshed look.

Color scheme: there should be a variety in the color scheme breaking the monotony, and modernity should be introduced in harmony to the historically artistic street.

Sculpture and art: the sculptures should be better organized with a prime focus on human figure idols since that is the primary kind of sculpture made by the community.

Illumination: Pure white light in adequacy should be installed with three levels of lighting for the proper functional and aesthetic perception of the street.

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