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The Relationship between Urban Elements and Statues Lighting and Increased Comfort, Security, and Sense of Belonging to Cities

Abstract

Urban lighting is a combination of the lighting of pathways, buildings, urban furniture, traffic lights, urban billboards (urban TVs), and seasonal lighting, which not only provides conditions for urban functions and activities at night but also creates security, comfort, and attractivity in urban environments. The present study aimed to investigate the relationship between urban elements and statue lighting and increased comfort, security, and a sense of belonging to cities. This study had an applied goal and fell under descriptive-survey research in terms of data collection and analysis. From an analysis perspective, the study was correlational. Also, from a time perspective, this study was a cross-sectional study. The statistical population consisted of experts, mayors, directors, and officials of District 6 of Tehran (around 400 people). The statistical sample was estimated to be 196 people by using the Cochran formula. Findings revealed that there was a significant relationship between urban elements and statue lighting and the increased comfort and security of visitors of urban spaces at night. This finding was confirmed following the study of respondents' views and the binomial ratio test results at the 95% confidence level. Also, there was a significant relationship between lighting styles and the increased sense of belonging to the city. This suggested that the researcher's hypothesis stating a significant relationship between lighting styles and the increased sense of belonging to the city was confirmed.

Keywords: *urban lighting, element lighting, urban statues, comfort and security, sense of belonging to a city*

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Introduction

As a symbol of human civilization, cities have always served as contexts for the development of all types of sciences to meet public welfare. Scholars of urban sciences have long sought to improve urban spaces. In this connection, lights and lighting have become major parameters to improve urban spaces. Lighting defines the night identity and image of cities, while the lack of which and night darkness could cause rising incidents, accidents, offenses, delinquency, and reduce social security. Since humans learned how to use natural light sources for illumination, light became an integral part of the human-made environment (Morehead & Griffith, 2011). The art of lighting can be regarded as a critical component of design, which incorporates light, color, and the art of aestheticism to create great masterpieces in interior and exterior spaces. This branch of design falls under one of the most important categories of design. This is because what great architects designed and considered architectural masterpieces are exposed to visitors and observers only for half a day, as they disappear in darkness by the end of the day unless systematic principles and techniques are applied to create a more illuminated space even in the darkness of the day. This illumination, however, requires many techniques, which a lighting designer needs to create an artistic masterpiece (Nadali, 2012).

Utilizing lighting knowledge, illumination, and color in urban spaces, which is a mix of sciences, technologies, and arts, is inevitable for the regeneration of urban identity, the effective economic, social, cultural, and leisure development of cities, and the strengthening of civil life and urban night vitality (Sadeghian & Sadeghian, 2013).

Light and lighting include various dimensions of urban life; thus, it is highly important to coordinate it with the urban space and environment. Today, many cities across the country are witnessing chaotic urban images and human environments due to the lack of lighting and failure to pay attention to the beauty of urban elements and statues. For this, if the night landscapes of cities are not addressed and used favorably, they can manifest as unpleasant urban forms and disrupt urban uniformity.

What appears to be plaguing many metropolises, especially the city of Tehran, is that the night landscape of cities has become a scene of competition between the powerful and the rich (Kiakajuri & Akhundzadeh, 2013). The metropolis of Tehran, the most populous city of Iran, is also struggling with night landscape problems. Each year, Tehran's municipality set up volumetric works and statues across the city in squares and urban spaces, which if managed well, can create a beautiful landscape at night and improve the quality of these spaces.

According to the existing situation in metropolises, attention to visual beautification and security issues is very much important for citizens. Therefore, emphasis on visual elements in the metropolis of Tehran and District 6 of the city, which is one of the most overcrowded areas of the city, to increase comfort, security, and a sense of belonging to the city is very critical. In this regard, attention to the effects of element lighting and urban statutes to improve the quality of the urban environment is key for citizens and the urban identity.

Urban Elements and Symbols

According to a general definition, urban elements refer to a set of components arranged in an urban space aimed at meeting peoples' subjective and living needs, as the elements overshadow urban identity and landscape both internally and externally. In another definition, urban elements are key components of urban furniture, which can greatly contribute to the promotion of citizens' sense of identity and place (McGee, 2008). The main role of urban elements across streets and urban spaces is to create places that demonstrate human identity and a favorable urban landscape. According to some scholars, urban elements, like any other elements, affect the image of a city; thus, they should be improved by accurate design and planning consistent with the public's culture and customs. Components of urban elements are characterized by their functions and visual beauty. If both characteristics are met, urban elements can meet citizens' functional and visual needs.

Urban elements have an undeniable link with urban statues. Urban statues are volumetric, and three-dimensional and involve artistic and expressive forms, which can be investigated from different angles. Statues take the forms of humans, animals, plants, and other objects, and are considered parts of urban furniture, being outside a closed space. They are distinguished from statues in closed spaces by visibility and a combination of observers. Other experts (e.g., landscape and urban furniture designers, and urban planners and designers) contribute to selecting appropriate places and scales (Habibi, 2010). The main function of urban statues is to decorate, identify, and convey a message to observers and promote the visual and cultural quality of citizens. Urban elements serve as one of the most important works of architecture and urbanization. These elements follow a geometric, balanced, and stable order to reveal themselves across the city, which attracts people visually and involves their minds, thus acting as unique components imprinted in the minds of people for a long time. These works not only affect the physical and environmental facets of a city but also indicate the beliefs, cultural foundations, and worldviews of a society and its attitudes toward the whole universe. These works are also of value to society.

The main audiences of elements and statues such as sculptured heads across cities are citizens; however, the truth is the creation of a pleasant sense and the inculcation of a goal or a culture through elements can help create a new culture consistent with social needs, thus affecting the spiritual, cultural, and social characters of citizens.

Display Elements

As the name speaks, display elements have simply demonstrative, artistic, and beauty functions. They do not express a special concept and do not convey a mission or a goal to introduce a subject to the viewer. They are combined and are abstracts of the encounter of masses, volumes, structural components, and surfaces (e.g., playing with lines and volumes and surfaces based on their geometric characteristics and internal relations), which can only communicate with a special group of people due to their aesthetic features and visual and subjective balances. The specificity of a group of people is a unique feature of a display element. In other words, they do not create a sense of belonging or contemplation in any single human; thus, due to the type of their audiences, who are natural people more involved in artistic issues and identify geometric balances and orders, and study artistic styles and conceptual and abstract arts, these elements are less seen across cities and they tend to be found more in galleries, works of art exhibitions, and generally in places where they can find their audiences (Dinari, 2012).

The Importance and Role of Symbols and Elements in Urban Landscapes

Urban symbols should be examined from two perspectives: one perspective is a cultural angle, which is the same as the dominant culture, and the other perspective is an internal and complicated reality embedded within society. When we speak of urban symbols, we encounter something that is a product of their encounters. Signs and symbols in communications are so important that the nature of communications is itself affected by symbols, without which humans cannot have a national identity. For example, the flag of each country is the eternal sign or symbol of the inhabitants of the land and can link humans throughout different centuries (Haji-Nejad et al. 2010). Symbols and signs in various civilizations have different values and significance, and they will have national value if they are accepted by the majority of people in a society. As human civilizations have throughout history been subjected to different developments, humans have unfortunately forgotten natural symbols (e.g., owls, snakes, ants, antelopes, and the like). In other words, with the development and progress of civilization, old signs lost their meanings and forms and took on new forms (Zandiya & Sami, 2010).

Signs and symbols are the oldest, most complicated, influential, and most interesting tools utilized to reveal the latent issues of the material and spiritual world. Man has managed to utilize these tools to represent his imagination in the form of art. An architect converts an idea in his mind into a house that he has outside his imagination. For him, a work of art is a sign that refers to the world of ideas. Architectural signs, like other symbols, have two functions meaning expression and the sense of identity creation (Razavi, 2010).

Urban Lighting

Perceiving urban identity mainly comes from urban space lighting, through which urban readability is enhanced, urban symbolism is created, urban security is strengthened, and the

urban sense of belonging is increased. As a result, an attractive and habitable city can be created for citizens. In designing the image of a city, light has different qualities and features, including awareness-raising, identifying regions and neighborhoods, increasing the identity load of centers, revealing signs, cultural heritage, and urban spaces such as pedestrian zones and plazas. Lighting is meant to re-read urban landscape features in the darkness of night, not cleaning and changing them. Using modern generations of light sources with smaller dimensions entails less energy while providing more illumination. To have a successful lighting design a method to redefine urban space characters is required; a good designer needs to pay attention to such aspects as urban identification, readability, and beautification (Sarrafi et al. 2010).

The living continuity of spaces at night is directly correlated with the lighting system of these spaces; a system that has to cover distinct functions. Light not only should provide safety and security for the population gathering in these spaces but it also should work as a space-making agent. The existence of light is the existence of buildings. In other words, night lighting is the continuation of design at night. Light design in each place should be proportionate to the special senses and semantic load of that place. This denotes that light design in each place should not only not contradict the climate of that place but should also strengthen it (such as the vitality feature in an urban square).

A city image should involve a form and content both in daylight and at night. According to Lynch, citizens' subjective image of a city is composed of five elements of paths, edges, nodes, landmarks, and districts or neighbors. Symbols, signs, nodes, walls, valuable buildings, silhouettes, and whatever is emphasized in urban design, which may have their functions disrupted after the sunset and when the night falls, could maintain their efficacy during the night by using artificial lighting modeling. Lighting is highly effective in increasing the quality of life and improving urban landscape. In essence, light is not a vehicle for illuminating a designed space; rather it helps design and create a space. Furthermore, night darkness creates an opportunity to hide urban landscape disharmonies and disturbances, but lays the ground for the illumination of whatever is deemed valuable. At night cities define their places and spaces the other way (Hayati et al. 2010). Life quality in cities is directly related to their lighting. Appropriate lighting can help crows gather at a place or distance away from it. Happiness, vitality, and contemplation can thus be strengthened in cities.

Study Method

The present study aimed to investigate the relationship between urban elements and statue lighting and increased comfort, security, and a sense of belonging to cities. This study had an applied goal and fell under descriptive-survey research in terms of data collection and analysis. From an analysis perspective, the study was correlational. Also, from a time perspective, this study was a cross-sectional study. The statistical population consisted of experts, mayors, directors, and officials of District 6 of Tehran (around 400) people). This study used the simple random method to calculate the sample volume. For this, we used the Cochran formula (sampling formula of limited populations) to estimate 196 people as the sample volume. To evaluate the hypotheses and investigate the relationship between the variables, the study used a close-ended questionnaire to gather data.

To meet the content validity of the scale, items were designed based on a review of the literature and theoretical foundations. Because a standard questionnaire to provide items of the indicators was lacking, the views and perspectives of professors, directors, and management experts, as well as the content of the existing literature were used. After preparing the questionnaire items, several copies of the questionnaire were provided to 20 people of the sample to study, investigate, and comment on the items. The final questionnaire was provided after being reviewed and corrected by supervisors and advisor professors.

This study used Cronbach's alpha to calculate the reliability coefficient, which was 0.86. Data obtained from the questionnaire were analyzed by SPSS software.

District 6 of Tehran Metropolis

District 6 is one of the relatively old regions of Tehran, which is located in the central part of the city. This region covers an area of 2138.45 hectares, roughly around 3.3% of the total area of the city. District 6 is geographically located in the central part of Tehran, which is bordered by District 3 to the north, by District 7 to the east, by Districts 10, 11, and 12 to the south, and by District 2 to the west. The physical characteristics of District 6 include its location in the center of Tehran, on the one hand, and the establishment of the most important administrative-service land uses with functional scales at trans-regional, urban, and even national levels. To the three directions of west, east, and north, this region is bordered by three main highways of Tehran, i.e., Chamran, Modarres, and Hemmat, while to the south, it is bordered by the largest eastern-western axis of the city, i.e., Enghelab Street. This region includes 6 areas and 18 neighborhoods. Student dormitories in this district affect the demographic and social texture of this region. The central building of the municipality of this district is located in Seyed Jamal Al-Din Asad Abadi Square (Kalantari Square) in Yusef Abad. The most important neighborhoods in the region include Nosrat, Keshavarz, Amir Abad, Yousef Abad, Behjat Abad, Karim Khan, Saei, and Arjantine. The texture of this region is composed of administrative and commercial areas, and for this, it has been

a revenue-generating area in Tehran since time immemorial. The most important places and parks in this region include Laleh Park, Saei Park, the Nezami Ganjavi Park, the Mary Church, Contemporary Arts Museum, Asr-e-Jadid, Felestine, Sepideh, Bahman, Esteghlal and Africa Cinemas, and also the Amir Kabir Industrial University and Teran University, not to mention others. Based on the 2011 Census, the population of this district amounted to 229980 (73212 households), including 110751 men and 119229 women (Figure 1& **Table 1**).

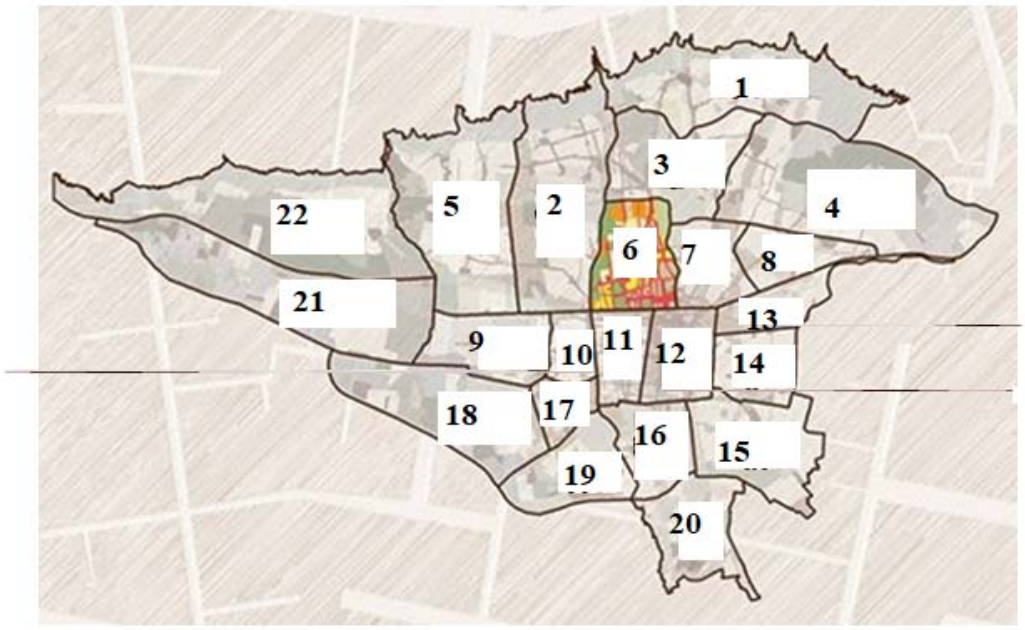

Figure 1: Spatial location of District 6 of Tehran

Table 1: General criteria and sub-criteria to calculate the development of Tehran's districts

General criteria	Sub-criteria
Housing indicators	Building age, building materials, residential unit sizes, the number of rooms, residential unit possession
Education indicators	The literacy percentage of the 6-and higher-year population, the percentage of literate people with higher education, and users per capita in the education sector
Demographic indicators	Demographic density, the percentage of population growth, household dimension, demographic percentage (until 14 years)
Employment indicators	Unemployment percentage, the number of experts-to-employed ratios, employment percentage in the services sector, employment percentage in the education sector
Information access indicators	The percentage of families enjoying subsidies, using the Internet
Environmental indicators	Disposal of kitchen sewage in the side well, disposal of kitchen sewage in the surrounding environment, disposal of toilet sewage in the side well
Infrastructure indicators	Utilities, fixed-line telephones, gas piping, central heating and cooling systems, bathrooms and kitchens

Findings

Findings revealed that the majority of the inhabitants were men (77%). In terms of marital status, 66% of the residents were married. The findings also concluded that people with educational degrees of B.A.s held the highest percentage (52%). Most respondents (53.5%) had a 10-year work

experience, while 50% of them were within the 20–30-year-old age range.

Table 2: Descriptive statistics of item responses about the relationship between elements and stature lighting and comfort and security

	Q13	Q14	Q15	Q16
N Valid	196	196	196	196
Missing	0	0	0	0
Mean	3.5969	3.6173	3.7347	3.9398
Median	4.0000	4.0000	4.0000	4.0000
Mode	4.00	4.00	4.00	4.00
Std. Deviation	1.01061	0.97744	0.98242	0.93717
Variance	1.021	0.955	0.965	0.878
Range	4.00	4.00	4.00	4.00
Minimum	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00
Sum	705.00	709.00	732.00	772.00

Table 3: Binomial Ratio Test Results

	Category	**N**	**Observed Prop.**	**Test Prop.**	**Asymp. Sig. (2-tailed)**
Comfort and Security Group 1	<=3	31	0.16	0.50	0.000*
Group 2	>3	165	0.84		
Total		196	1.00		

***: based on Z Approximation**

According to Table 2, the mean score of all four items was higher than 3; thus, the total mean was 3.73, ranging between 3 and 4 on the scoring spectrum. Therefore, it is concluded that respondents suggested that there was a significant relationship between urban elements and statues and increased security and comfort of visitors in urban spaces at night.

To better evaluate this, the binomial ratio tests were carried out, whose result is given in Table 3. Because this test calculates each factor based on the means of several variables, the ratio was taken to be 0.5, and the cut-off point was defined to be 3. According to the software outputs, because the significance was 0.000 and less than 5%, the assumption of the ratio being equal to 0.5 was rejected. Also, since the observed ratio was higher than 0.5, the subjects who selected higher-than-medium responses were many. Thus, for the majority of the respondents, there was a significant relationship between urban elements and statue lighting and an increased sense of comfort and security among visitors of urban spaces.

Table 4: Descriptive statistics of the relationship between lighting styles and an increased sense of belonging

	Q17	Q18	Q19	Q20
N Valid	196	196	196	196
Missing	0	0	0	0
Mean	3.9235	3.827	3.7296	3.4896
Median	4.0000	4.0000	4.0000	4.0000
Mode	4.00	4.00	4.00	4.00
Std. Deviation	0.84687	0.86618	0.84934	1.03522
Variance	0.717	0.750	0.721	1.072
Range	4.00	4.00	4.00	4.00
Minimum	1.00	1.00	1.00	1.00
Maximum	5.00	5.00	5.00	5.00
Sum	769.00	761.00	731.00	684.00

Table 5: Binomial ratio test results

	Category	N	Observed Prop.	Test Prop.	Asymp. Sig. (2-tailed)
Lighting styles					
Group 1	<=3	21	0.11	0.50	.000*0
Group 2	>3	175	0.89		
Total		196	1.00		

***: based on Z Approximation**

According to Table 4, the mean score of all four items was higher than 3; thus, the total mean was 3.73, ranging between 3 and 4 on the scoring spectrum. Therefore, it is concluded that respondents suggested that there was a significant relationship between lighting styles and an increased sense of belonging in visitors to urban spaces at night.

To better evaluate this, the binomial ratio tests were carried out, whose result is given in Table 5. Because this test calculates each factor based on the means of several variables, the ratio was taken to be 0.5, and the cut-off point was defined to be 3. According to the software outputs, because the significance level was 0.000 and less than 5%, the assumption of the ratio being equal to 0.5 was rejected. Also, since the observed ratio was higher than 0.5, the subjects who selected higher-than-medium responses were many. Thus, for the majority of the respondents, there was a significant relationship between lighting styles and an increased sense of belonging among visitors to urban spaces.

Conclusion

The goal of the present study was to investigate the relationship between urban elements and statue lighting and an increased sense of comfort and security and a sense of belonging to cities. The results indicated that there was a significant relationship between urban statues and elements of lighting and increased security and comfort of visitors of urban spaces at night. A survey of respondents' views and the binomial ratio test results at the confidence level of 95% also confirmed this. In other words, the researcher's hypothesis stating the significant relationship between urban elements and statue lighting and the increased sense of comfort and security among people at night was confirmed. Thus, it was concluded that experts, mayors, and officials of District 6 found that there was a significant relationship between urban elements and statues and the increased comfort and security of visitors of urban spaces at night.

The results indicated that there was a significant relationship between lighting styles and the increased sense of belonging among visitors to urban spaces at night. A survey of respondents' views and the binomial ratio test results at the confidence level of 95% also confirmed this. In other words, the researcher's hypothesis stating the significant relationship between lighting styles and the increased sense of belonging among visitors of urban spaces at night was confirmed. Thus, it was concluded that experts, mayors, and officials of District 6 found that there was a significant relationship between lighting styles and the increased sense of belonging among visitors of urban spaces at night.

Light and lighting should not cause depression, distress, and anger among people; in fact, Different types of light should complement each other and follow a special rule. Different types of light should convey special meanings or messages. When different types of light are used without regard for the meaning latent in them, environments will become unpleasant and unfavorable settings for people. Comprehensive light plans should be made available for cities and follow proportionate rules. Plans of this kind can determine the fate of urban spaces and regions and create harmony among fixed and moving elements of urban spaces. It is also a method to participate people in urban beautification.

A questionnaire itself is seen as a limitation. This denotes that a questionnaire examines people's attitudes rather than reality, and this can be considered a limitation.

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