

Research Paper

Placemaking in Historic Sites with Lighting Scheme Case Study: Naghshe-Jahan Square, Isfahan, Iran

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Received: May 2021, **Revised:** June 2021, **Accepted:** June 2021, **Publish Online:** July 2021

Abstract

This study aims to investigate how lighting design can be used as an environmental design feature within historic sites in cities to turn a space into a place through placemaking processes. Accordingly, the research question is: What artificial lighting design aspects need to be taken into account in historic sites within cities through a placemaking process? Naghshe-Jahan Square's in Isfahan, Iran, is chosen as the case study as it is registered as a UNESCO World Heritage Site. This research uses ethnographic research methods as a qualitative research method for collecting data about the lighting scheme of Naghshe-Jahan Square. Based on the main aim of placemaking which is to Strengthen people's connection with the public places they share in order to maximize shared value, this research uses two ethnographical techniques; behavior observation and semi structured interviews with the visitors of the historic site. Accordingly, people's behaviors and interaction with the site and their opinions on how the lighting of the site makes them feel and facilitates their needs is collected. The findings of this study suggest that artificial lighting can positively influence turning historic sites to places at night-time and accordingly improve the quality of people's lives in cities.

Keywords: *Lighting in historic site, Place and space, Placemaking, Naghshe-jahan square.*

REVIEW OF THE LITERATURE

1. INTRODUCTION

Today, more than half of the world's population lives in towns and cities and this figure is expected to increase to 68% by 2050 (United Nations. Department of Economic and Social Affairs, 2018). This imposes pressure on larger cities regarding the provision of high-quality living places and infrastructure. Thus, it is important to respond to the needs of cities to provide quality living spaces.

Physical environments can influence people's physical and emotional wellbeing over both the short and longer term (Stokols, 1990), so the features of these spaces are extremely important. Placemaking is a process that is engaged in to craft spaces within cities. It is a process of planning, designing, managing, and programming, all done with the aim of developing shared spaces within cities.

Tweed and Sutherland (2007) argue that cities' heritage plays a vital role in social health and community wellbeing so to serve the increasing populations of cities, with the heritage sites of cities having the ability to serve as infrastructural sites. Fletcher et al. (2018), notes that historic sites play a vital role in the process of placemaking within cities in that they are associated with certain values.

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Although historic sites are found to have such significant potential as part of the urban spaces within cities, they are usually visited during the day and so, when darkness falls, they become less appealing as a result of the reduced illumination. Due to the importance of these spaces in cultivating a sense of place amongst people and their significance in the facilities they provide, the lighting of these spaces during night-time becomes fundamentally important, especially given the diverse range of uses such spaces can have in relation to cultural, social and entertainment-related activities (Brandi & Geissmar-Brandi, 2007). Light is a primary element in the field of architecture and urban design. Solid volumes and enclosed spaces, colour, and texture can only be appreciated fully when they are imaginatively lit (Khakzand & Azari, 2014). In this regard, lighting is an important tool that should be used to provide not only access but also meaning and functionality to historic sites and urban spaces generally (Brandi & Geissmar-Brandi, 2007).

2. PLACE, SPACE, AND PLACEMAKING

Place is defined in different ways across different disciplines, and, while these uses all relate to the environment, identity and meaning, there are often differences in emphasis. “place” has many components to its definition, including many dimensions and considerations, such as physical size, whether the space is tangible or symbolic, and whether the space is familiar through previous experience (Low & Altman, 1992). Thrift (2006) states that the concept of place (and the related concept of placemaking) is growing rapidly across a spectrum of human sciences and professions, including geography, social anthropology, landscape architecture, architecture, environmental psychology, planning, and philosophy. In all these fields, one of the recurring features of spaces is their occupants, and their personal, cultural, or social backgrounds and thoughts (Low & Altman, 1992).

“Place” can be defined in terms of various multi-dimensional environmental features, both physical and psychological. Certain well-known architects have sought to define this term as it is used within their field of studies. Sime (1986) considers that the term “place,” as opposed to “space,” implies a strong emotional tie, temporary or more permanent, between a person and a particular physical location. However, he also argues that places are not restricted to physical locations, adding that the dimensions of a place relate to an individual’s connections with a physical setting that give rise to meaning, whether individually or collectively (Sime, 1986). Christian

Norberg-Schulz, also influenced the revival of the spirit of place in urban and environmental studies, most significantly amongst architects (Samalavicius, 2012). In this regard, he emphasized the importance of the physical features of settings in defining “place” drawing comparisons between places and spaces that also made reference to the character. For Norberg-Schulz, the existential aim of architecture was changing spaces to places, and so architects were viewed as those who are supposed to pay attention to discovering the meanings that a setting can present.

Relph (1976) classifies three components of places, which are 1) the physical setting; 2) the activities that take place in the setting, and 3) the meanings a setting carries. He takes the view that meaning is the hardest element to grasp and is also the most vitally important. He, therefore, argues that architects failing to consider the meanings of place destroy the sense of authentic places and instead construct spaces that are inauthentic (Relph, 1976a).

3. PLACEMAKING

Placemaking is the process of planning, designing, managing, programming, and developing shared-use spaces. More than just designing spaces, placemaking is done to bring together diverse individuals and organizations including professionals, elected officials, residents, and businesses to improve a community’s cultural, economic, social, and ecological situation.

The placemaking design process aims to increase the connection between people and the places they share, so it refers to a collaborative design process to shape the public realm in order to maximize shared values. More than just promoting a better urban design, placemaking enables creative models of use, focusing specifically on physical, cultural, and social identities that define a place and support its ongoing evolution (Project for Public Spaces (PPS), 2007).

In the 1960s, Jane Jacobs and William H. Whyte introduced more sensory and intangible elements to the framework of designing cities for people, moving beyond shopping centers and vehicles. Jacobs believed in planning based on the neighborhoods’ wisdom, taking a bottom-up approach to arrive at the best design for each location. They supported mixed-use neighborhood planning to divide residential and commercial functions and opposed traditional wisdom prescribing high-density building, taking the view that, if high-density spaces were well planned, they would not give rise to overcrowded spaces.

William H. Whyte (1917-1999) also introduced a set of factors for creating socially lively public spaces. In 1969, when working with the New York

City Planning Commission, he began to think about new research on how modern cities were functioning. This resulted in the “Street Life Project”, which considered how pedestrians behaved in cities and city dynamics. He suggested that social life in public spaces promotes the quality of life among people and the whole of the society in a fundamental way. He argued that planners must consider civic engagement and community interaction in designing physical places (Birch, 1986).

Rapson (2013) introduces four parameters to consider in the pursuit of a creative placemaking approach, with these pertaining to 1) the basics of place, 2) the involvement of authentic and community-based involvement, 3) the support of the development of the present community, and 4) the involvement of the capacity of arts and cultural organizations to take an outer orientation. Kurniawati (2012) takes the view that public spaces must consider at least three of these basic parameters. If this is correct, then public spaces must therefore be responsive and accommodate different activities. They must also be constructed such that the interests and wishes of the users are considered, and they must be accessible to people with physical disabilities and also be meaningful in terms of facilitating connections between people, the space, and the world at large.

Project for Public Spaces (PPS) (2007), a non-profit organization dedicated to helping people create and sustain public spaces to build strong

communities, outlines four qualities that the organization takes to be the crucial components of a successful public space, these being: 1) the accessibility of the place, 2) the associated activities that people can engage in, 3) the comfort and image of the place, and 4) how sociable the place is. The Place Diagram developed by PPS, given below, is useful for evaluating places in terms of these different criteria:

4. HISTORIC SITES

A core aspect of contemporary definitions of the historic environment is the connection between tangible factors, such as structures and items, and intangible factors, such as recollections and imagination (Heritage, 2002). Based on the definition provided by English Heritage (2002), the historic environment encompasses the entirety of actual evidence of previous human activities and its connections, which individuals can observe, comprehend, and sense in the modern world. Such a definition ensures that there is the inclusion of locations such as villages and towns, coastal areas and mountains, as well as structures, archaeological sites and deposits, fields, and hedgerows; it is also ensured that there is the inclusion of structures and places inhabited by people in both physical and imaginative senses (Heritage, 2002).

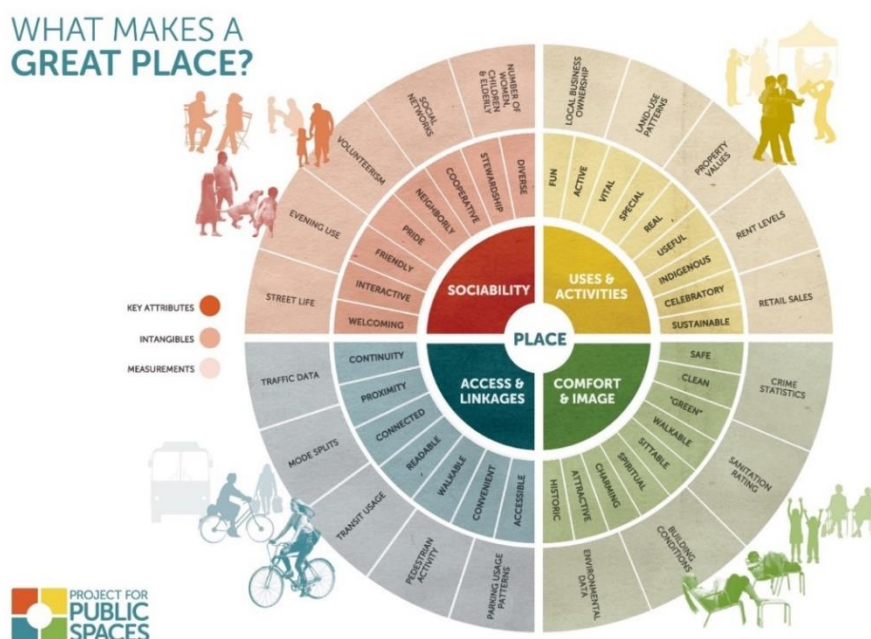


Fig 1. Place Diagram developed by Projects for Public Spaces

5. THE DEVELOPMENT OF LIGHTING IN HISTORIC SITES

The chronology of illumination within historical sites is analogous to the lighting within urban areas. Illumination within historical sites was originally intended to be functional, although this was dependent on how accessible the site was to the general public. Comparable to streetlights, the primary source of lighting consisted of poles that illuminated different paths and areas (Holden, 1992). However, due to developments in city lighting as a result of the creation of innovative light sources in the 1970s (low-pressure sodium constituting an example of such light sources), UNESCO introduced a convention for historical places that proposed a new strategy for illuminating such settings. This comprised aesthetic illumination involving floodlights, which was widely adopted in respect of different historical spaces (Pingel, 2010; Ünver, 2009; Van Santen, 2006)

Subsequently, in the 1980s, as a result of studies focused on the area of lighting design highlighting the capabilities and possibilities of light, together with the status of historical places with regard to social and economic factors, the utilization of lighting within historical sites witnessed another transformation. In this era, urban lighting was comprehensively redesigned on the basis of what was known as urban lighting masterplans (Sirel, 2006). It was demonstrated by experts that light is capable of visualizing the appropriate value of the historic place and cultural heritage, promoting and evoking certain experiences of visitors in the context of the historic place. Such practices can also give rise to certain emotions, suggestions, and evocations (Di Salvo, 2014). Additionally, as part of the theory of 'Genius Loci' proposed by Norwegian architectural theorist Christian Norberg-Schulz (1926–2000), who was associated with the Modernist architectural movement and had connections with architectural phenomenology, a suitable lighting environment can engender a feeling of place and specifically constitute the 'Genius Loci' (Jiven & Larkham, 2003).

At the start of the current century, drawing on previous studies and experience, lighting developers began to utilize illumination to cultivate a sense of atmosphere within historic settings (Bonn et al., 2007). The lighting projects developed for certain UK sites listed on the UNESCO world heritage list recognized the UNESCO international year of light (2015), one of which was the Twelve Closes lighting project operated by Edinburgh World Heritage in conjunction with Napier University and the City of

Edinburgh Council. Another lighting project that exemplified this approach was developed for the Saint-Avit-Sénieur world heritage site within France (2014).

6. RESEARCH METHOD

To document how people interact with and feel about their experiences in historic sites, the qualitative research method was chosen as a suitable and effective method in terms of its dealing with the subjective topic of the lighting of historic sites (Corbin & Strauss, 2014; DeFranzo, 2011; Kotler, 2012). Case study research design was chosen for this research as a means of studying a specific case of a world heritage site with lighting features with a view to learning from an existing sample. Case studies refer to a research design that is qualitative, such that the research examines the characteristics of a single case, a single phenomenon, instance, or sample (Yin, 2003; Campbell & Stanley, 2015). This research design can extend knowledge by considering what is already known through previous examples, enabling detailed descriptions to be provided of specific or even rare cases that the researcher can learn from. This research method does provide a means of obtaining feedback that is more realistic in comparison with statistical surveys. Case studies also provide flexible means by which to introduce unanticipated and new data and results that can give rise to original directions in the research. Gerring (2004) defines a case study as "an intensive study of a single unit for the purpose of understanding a larger class of (similar) units". Studying the existing examples help to identify how different lighting features worked in relation to placemaking, and also facilitated consideration of what specifications of light in world heritage sites resulted in specific activities and behaviors that contributed to enhancing the sense of place. Adopting the case study research design also helped with gaining valuable feedback from users. Accordingly, Naghshe-Jahan Square in Iran was chosen as the current study's case study to learn from a realistic example.

7. ETHNOGRAPHIC RESEARCH, OBSERVATION, AND SEMI-STRUCTURED INTERVIEW

This research makes use of ethnographic research methods as a qualitative research method for collecting data (Burgess, 1982; Murphy & Marcus, 2020). Brewer (2000) defines ethnography as "the study of people in naturally occurring settings or

‘fields’ by means of methods which capture their social meanings and ordinary activities, involving the researcher participating directly in the setting, if not also the activities, in order to collect data in a systematic manner but without meaning being imposed on them externally”. Accordingly, it stands to benefit from drawing on the findings of observation and interviews as two ethnographic research methods to shed light on individuals’ behavior as it relates to the lighting scheme of the case study.

Aktinson and Hammersley (1998) isolate observation as one of the main methods that can be used in ethnography. The process enables the researcher to gain an understanding of people’s activities within a natural setting and also obtain a sense of how the setting influences their behaviors (Bechtel et al., 1987). Observation can also provide guidelines for further interviews with the participants within the setting (DeWalt & DeWalt, 2002).

Accordingly, after people’s behaviors and activities were observed, they were approached for interviews with a view to gain their freely-offered insights. Interviews with the visitors also helped provide a more precise understanding of how the lighting of the space made the visitors feel, how it facilitated their social and cultural experience of the space, and how it assisted with cultivating a sense of place amongst them. Interviews involve extensive discussion with individuals in pursuit of a deep understanding of a particular subject, and the relationship between the phenomena and its meanings are understood on the basis of the participants’ free and flexible answers (Barbour & Schostak, 2005; Brinkmann, 2008; Cassell & Symon, 2004). These interviews were held in a semi-structured format which allows the researcher to design the interview ahead of time and allows the interviewee’s significant freedom in responding to the questions and producing valuable data (Brinkmann, 2008; Dudovskiy, 2018). The interviews were conducted in the native language of the

interviewees, that is, Farsi. Thus, they should be both translated and transcribed. The intelligent verbatim approach (Green et al., 1997; Isaac, 2014, 2015) was chosen as a means of providing more space for the interpretation and analysis of the interviewee’s answers. This also assisted with making the responses more understandable and, especially in the case of the visitors’ interviews, leaving adequate space for body language and cultural aspects to be considered in the analysis of the data.

8. CASE STUDY INTRODUCTION AND SITE ANALYSIS: NAGHSHE-JAHAN SQUARE

Naghshe-Jahan Square (Image of the World) in Isfahan, Iran, was selected because it is a UNESCO world heritage site that includes existing lighting schemes for the surrounding buildings as well as the bazaar and the green landscape, all of which could be studied in an informative manner for the present research. Naghshe-Jahan Square satisfies three of the 10 stipulated criteria for inclusion as a World Heritage Site (UNESCO World Heritage Centre, 2008; Frey & Steiner, 2011).

It is an open urban square located in the middle of Isfahan. It is one of the largest urban squares in the world with dimensions of 560m by 160m with a total area of 9 ha and is highly representative of both Islamic and Iranian architectural design. Originally constructed at the beginning of the 17th century by Safavid Shah Abbas I, two-story arcades surround the square and four exceptional structures anchor it on each side: The Sheikh Lotfallah Mosque to the east, the Pavilion of Ali Qapu to the west, the Portico of Qeyssariyeh to the north, and the famous Royal Mosque to the south (Figure 1). A harmonious urban collection constructed on the basis of a distinctive, logical, and coordinated plan, Naghshe-Jahan Square represents the core of the Safavid capital and is considered an extraordinary urban realization.

Table 1. Data-collection Process

Stages	Data Collection	Duration and Numbers	Study Focus
1	Study the Lighting Installation of Naghshe Jahan Square	One week- summer	understand the site and the existing lighting scheme installations
2	Behavior Observation	3 weeks over summer- sunset to midnight	Study people’s activities, interactions, and behaviors amongst each other and with the site as a result of the lighting scheme
3	Semi-Structured Interview	56 participants	Understand People’s feelings and perceptions towards the lighting scheme, and how they feel the scheme makes them cultivate a sense of place

9. LIGHTING INSTALLATIONS OF NAGHSHE-JAHAN-SQUARE

The site is illuminated by light emanating from public lighting installations, as well as light from shops and historic structures surrounding the square. On this site, there are near 60 poles with high-pressure sodium lamps serving as the main source of lighting for the square (Figure 2). Observing the site, the quantity of light provided by these 60 poles is

insufficient even in relation to the basic functions of safety and accessibility. There are many areas that are left dark without any specific functionality or purpose. Many of the light fixtures in Naghshe-Jahan Square are visible from the site. In this regard, the high altitude and the angle of the light bulbs have resulted in light pollution. Overall, the center of the site is darker than the surroundings of this historic building.

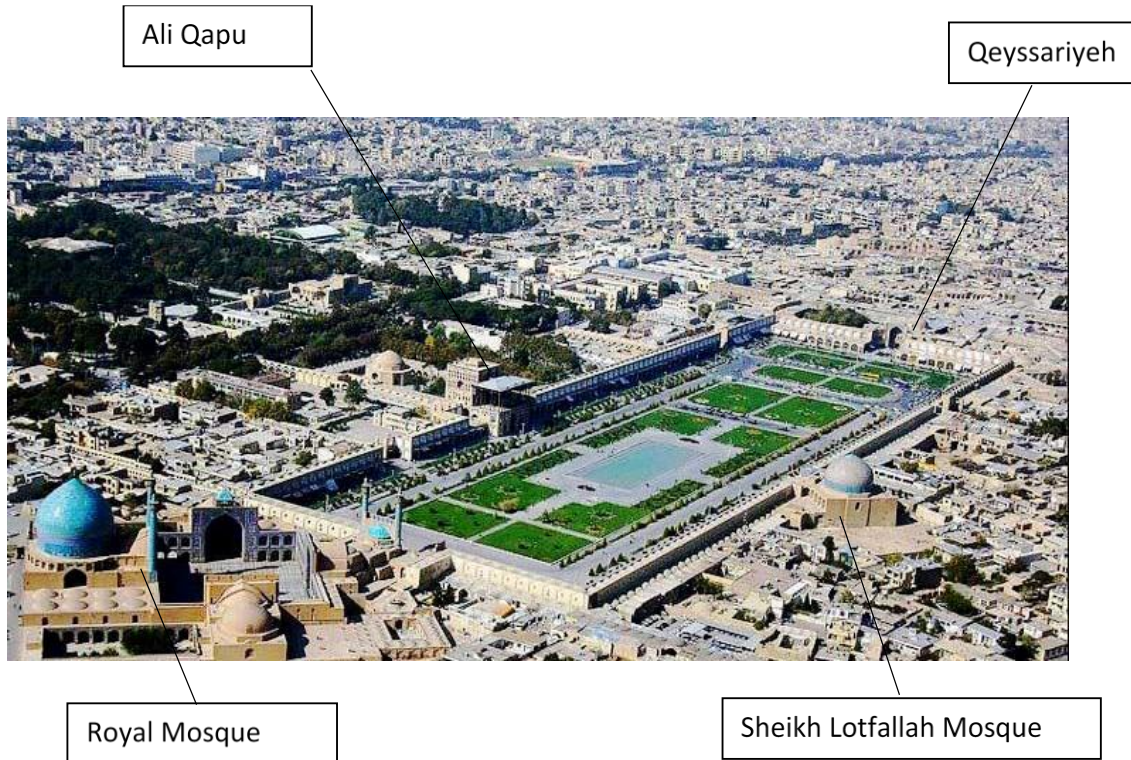


Fig 1. Aerial View of Naghshe-Jahan Square



Fig 2. The Main Light Sources of Naghshe-Jahan Square Are Streetlights

In Naghshe-Jahan Square, the lights of the shop windows offer another source of light in the site (Figure 3). Shops are located all around the site, and every shop is lit with various qualities and quantities of indoor and outdoor light. Each shopkeeper installs their own lighting for their shops with the aim of attracting increased levels of custom. Above the shops is the first floor, which features several arch-shaped terraces (Figure 3). These terraces are lit with cool light, which stands in contrast with the warm lighting installations used in most of the shop windows.

Interestingly, the ground of the site is covered with high glossing and reflective stones, reflecting the lighting of the shop windows even more (Figure 3). When standing near the shop windows, one's eyes are exposed to increased levels of light. In this situation, it is difficult to perceive the landscape of the site in which the majority of socializing and picnicking takes place.

The lighting setup of the shops is also such that there are often reflections in the glossy paving. The reflection reduces the problem as the bright area is now much larger and actually fades into the darker areas with no abrupt change in luminance (Figure 3).

Bollards and smaller poles in the landscape of the site serve as another light source in Naghshe-Jahan Square (Figure 4). The main issue with these is that they emit a relatively harsh glare. Many of the visitors picnicking on the site were seen to cover the lightings with children's clothes or plastic bags to reduce the glare. Most of these fixtures are as high as a person sitting on the grass, resulting in the light being exactly at the level of visitors' vision.

Furthermore, due to the low level of overall light on the site, people were seen to sit close to these mini poles so that they could make use of the light emitted but still covered these with clothes or bags, as already noted, to reduce the glare. Uniformity of the light distribution from these poles was also especially evident as a result of the poles' arrangement; while the poles were of the same size and same distance apart, some of them were brighter than others, leading to differences between these sources of light in terms of the size of the area illuminated.

Each of the historic buildings within the site has their own light source, but even the lights confined to a single building do not have uniform characteristics. Some parts of domes, for instance, are lit using LEDs, with other parts being lit with metal halide. The main technique used to light up all these buildings is floodlighting, making use of high-powered light bulbs to illuminate the large outdoor space. Thus, the architectural features and the specific characteristics of the historic site were not considered due to problems relating to both glare and the color rendering index (Figure 5).

In the Royal Mosque, while the main color of the tiles is Persian blue and could therefore benefit from light sources that highlight their beauty at night, the existing light sources are floodlights, which flatten and change the look of the entrance. Sheikh Lotfollah Mosque is subject to the same problem. The mosque's dome even disappears towards the very top during the night, as the floodlighting only sheds light on parts of the dome. The dusty shade, light pollution, and glare emitted are other problems associated with the floodlights on site (Figure 5).

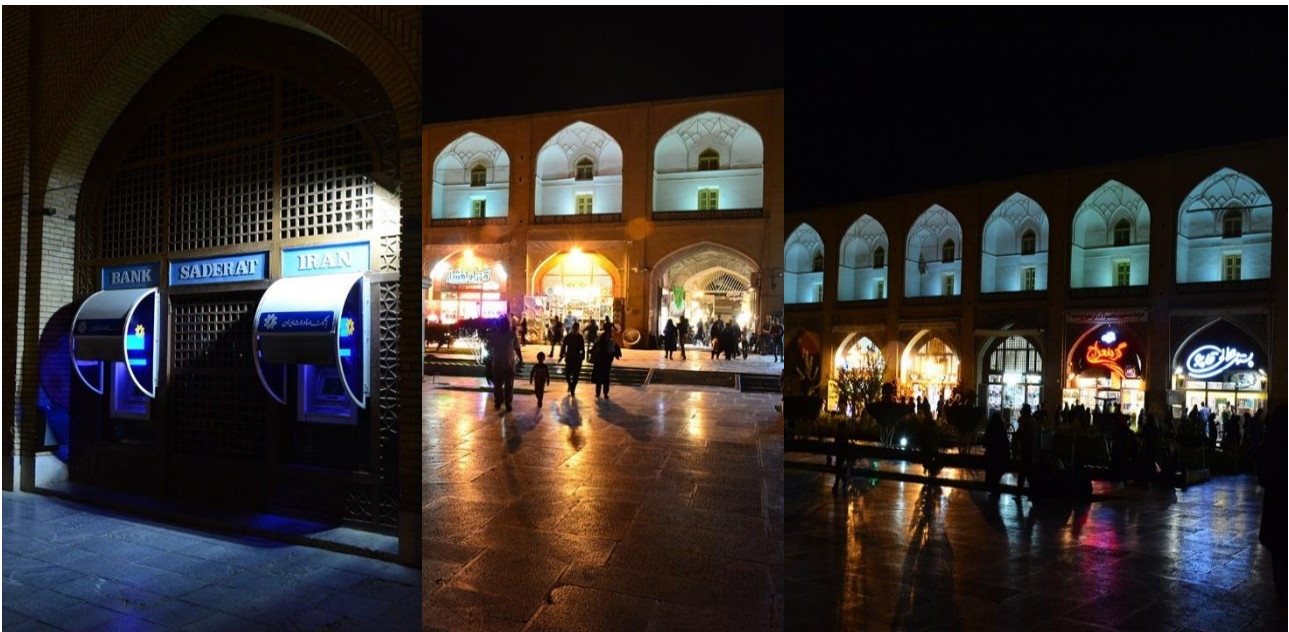


Fig 3. Light from Nearby Shops



Fig 4. Illumination of Pathways with Mini Poles

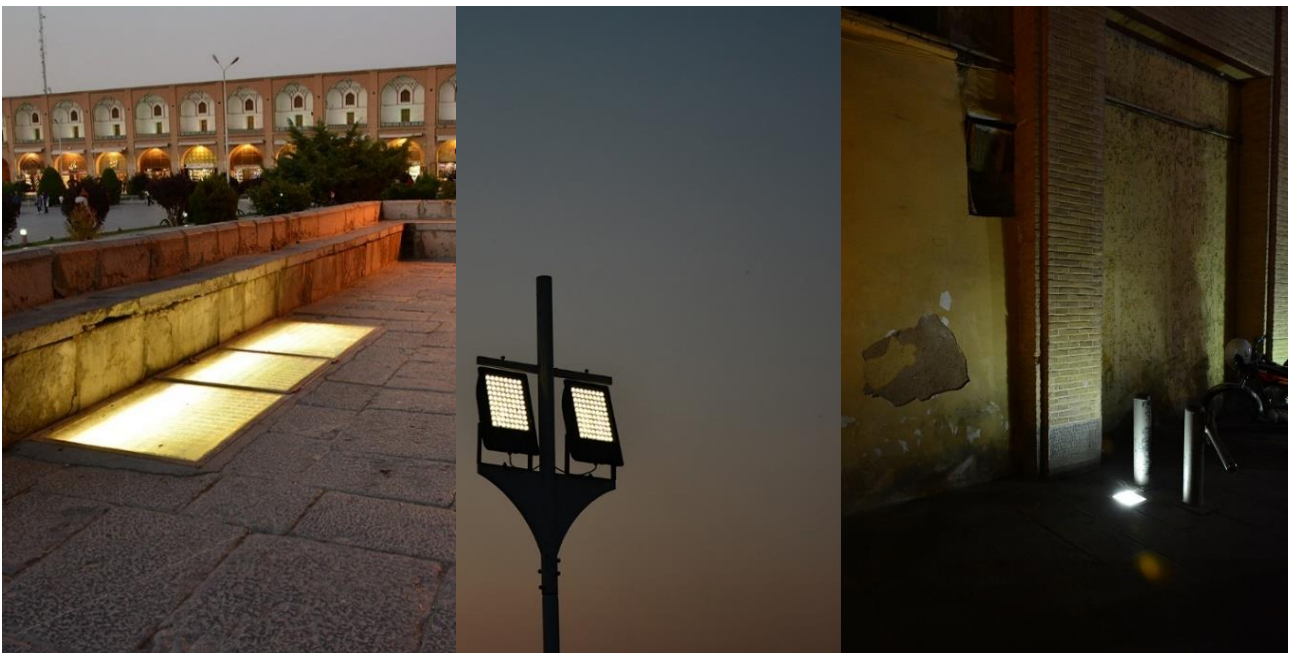


Fig 5. Floodlighting for the Buildings and the Site More Generally

10. RESULTS AND DISCUSSION

The findings gathered through interviews and observations mainly focused on two sections. Firstly, part of the findings explained what the people believe to turn a site into a place rather than a space. It should be noted that although none of the individuals interviewed on-site were familiar with the concepts of placemaking, however, some of the information the interviewees provided in response to the discussions did indeed relate to the placemaking processes. So, although they were not aware of what

a placemaking process involves in theory, they did point to certain aspects that made Naghshe-Jahan Square a place that will be presented.

Secondly, the findings presented what people believe the lighting of the historic site should encounter to facilitate the placemaking process. A well-designed lighting installation was found to have many beneficial effects on historic sites and people, and the results obtained here make clear the benefits that lighting, in particular, can have on historic sites. Studying these effects shows that some of the effects that are pointed to are exactly similar to

the benefits associated with placemaking, demonstrating that lighting can be used as a tool for placemaking in historic places.

11. THE BENEFITS OF THE PLACEMAKING PROCESS

11.1. Social Engagement as a Result of Placemaking

Encouraging social engagement among people emerges as one of the most valuable benefits to be found among the findings (Figure 6). The majority of the people agreed that this site was one of their favorite places to meet friends and families and engage in social activities. Picnicking with family was amongst one of the most observed and referred to activities amongst people. They pointed to other socializing activities such as walking with friends, having a snack with friends and family, and bringing children to play ball games in the grassy areas. Some of the reasons regarding why they chose this environment for socializing were reflected in submissions such as “this place is really peaceful”, “we love coming here; it’s very suitable for family gatherings compared to other public spaces in the city”.

Within the literature, Jane Jacobs and William H. Whyte are amongst the most famous urban scholars referring to the importance of social engagement opportunities that urban spaces need to foster. Zielinska-Dabkowska and Xavia (2018) also suggest that, nowadays, heritage sites are coming to be known as socializing destinations not only for daytime activities but also night-time social engagement. Canter (1977) and Cross (2001) explain that engaging in social activities within a space constitutes one of the central transformations that must occur for a space to become a place.

The results for Naghshe-Jahan Square reveal that this historic site serves as one of the most important sites for social gatherings in the city. However, the lighting of this site was not identified as having a positive impact on the social engagement occurring within the site.

11.2. Placemaking Results in Gaining Meaning and Value

Another important matter mentioned that a place has was the fact that the site encounters meaning and value. One person said, “Naghshe Jahan is a very meaningful place to us local people, we are very emotionally attached to it”. Another said, “this place is truly like a diamond in the city. It is historically and culturally very valuable to the city”. Another said “you know, there are other squares all over the city, even historic ones, but there’s something about Naghshe Jahan that has so much meaning to us that the others don’t have. It makes it very unique, very valuable, very precious”.

This supports the extant literature in the field. Rapoport (1990) puts forward that places comprise both meanings and messages that people receive and interpret within a space. Sime (1986) puts forward that a place is a combination of people’s principles and values, and so a place is a space such that there is a strong association with values and meanings.

According to Relph (1976), classification of the three parts of a place, the physical setting, the activities carried out there, and the meanings a setting carries are all important components. Within these different components, meanings constitute the hardest component to grasp but are still vitally important to consider.



Fig 6. People Picnicking in Naghshe-Jahan Square

11.3. Placemaking Amplifies Identity

One further benefit of turning a space into a place is that it amplifies identity. A place has the potential to encourage behaviors that strengthen activities relating to people's identifications. In this relation, it was observed that while there were horse carriages or the bazaar for the use of people, but the commercial and sport-related activities are located in the borders. In the center, there are families picnicking together on the grassy parts which is more of a social activity (Figure 7). This was also supported by interviewing people while the majority did point to their desire to picnic in the landscape while not many referred to riding on the horse carriages.

As Montgomery (1998) explains, spaces that offer identity and meaning to a city can positively influence citizens' quality of life. Furthermore, as Ayala (1995) explains, creating a distinctive identity and perception of the place is a significant factor in the development of effective tourist sites, with the site providing a sense of uniqueness and conveying a particular identity. In this vein, Buttimer and Seamon (2015) consider several relevant features of places including citing identity as a particularly central factor to experiencing a place.

11.4. Placemaking Results in Visual Enrichment

Another issue that makes a space turn into a place is its visual enrichment. It has been claimed that visual aspects within Naghshe-Jahan Square are among the main reasons people visit the site. One said, "where else can you find full of beautiful architectural elements to see in one place?". Another said, "the beautiful landscape and the most beautiful

buildings are all in one place here. This is what makes it so special".

Relph (2007) believes that the string "sense of place" is usually used to refer to what he describes as the 'spirit of a place', with a place that has a unique spirit or identity being considered attractive. In this way, identity can assist with making a place attractive.

11.5. Placemaking Results in Economic Development

Another important aspect found through the interviews which were also clearly observed, was the fact that placemaking can enrich the economy of an area (Figure 8). Many pointed to visiting the square for the bazaar to shop handicrafts or traditional herbs and spices, all of which had a cultural and regional root. They also pointed to the use of food shops, some mentioning "we always have a traditional saffron ice-cream from the shop here", "we love the traditional restaurant on the second floor of the bazaar, the food is great". Some cultural events were also pointed to as a reason for visiting the square during the evenings. All these activities which can increase the chance of a place being used until later in the evening resulted in enhancing commercial activities.

Several of the interviewees also emphasized features of the Naghshe-Jahan Square that make it a prime tourist destination (Figure 9). One said: "Naghshe Jahan is certainly the first tourist destination for all visitors". Another said: "you can't be a tourist to Isfahan and not visit Naghshe-Jahan. It's probably one of the main reasons tourists choose Isfahan", while another person said: "it is a very successful place in attracting tourists from all around the world".



Fig 7. Riding on Horse Carriages is one of the Attractions for Visitors

Vazquez (2012) also lists economic benefits as a potential outcome of placemaking. Other studies that are concerned with urban regeneration projects, such as Lichfield (2000), Roberts and Sykes (2008), and Morrison (2018) outline the ways in which redeveloped and renewed environments can serve to enhance both economic and social metrics applying to such sites. All such factors are found to improve the quality of life in cities.

12. THE LIGHTING FOR HISTORIC PLACE

12.1. Lighting Has Economic Outcomes

Economic benefits constitute a well-known benefit associated with the installation of effective

lighting schemes within historic sites. In fact, the majority of the people interviewed on-site pointed to how the lighting installation has allowed the historic site to be better known amongst people and encouraged tourists to travel to the city, resulting in increased demand for rental rooms, as well as in local restaurants and shops. The local restaurant owners reported that they are extending their services until later in the evening, as tourists visit the site at night-time for the lighting. One shopkeeper interviewed confidently said, “of course lighting effects our sales.” He pointed to the fact that many people prefer shopping in the evenings to stay away from the warm weather during the day, and if the site was left dark, no one could visit during the dark hours.



Fig 8. The Bazaar is Set Out all around the Perimeter of the Square, and is Open until Late at Night



Fig 9. Naghshe Jahan, One of the Top Tourist Destinations in Iran



Fig 10. Most Visitors Observed in Naghshe Jahan Were Local People Engaged in Night-time Picnicking with their Families



Fig 11. Many People Come to Naghshe-Jahan Square for Cultural or Religious Programmes

Economic benefits are counted as one of the main outcomes of placemaking and urban regeneration results within the literature, as discussed in Section (Morrison, 2018; Roberts & Sykes, 2008; Vazquez, 2012). Rankel (2014) and Fletcher et al. (2018), focus on how historic sites can positively influence the economy, but they do not consider the fact that the lighting of these sites can be even more influential. In Naghshe-Jahan Square, the lighting seems not to have had much, if any, positive influence on economic growth. In fact, none of the visitors pointed to the lighting as a reason for visiting the site. What studying this case study reveals is that, although historic sites can give rise to economic results for cities at a higher level, if an adequate

lighting scheme is not present, there will be a loss of potential in relation to the site.

12.2. Lighting Provides an Aesthetic Improvement, Leading to Improved Quality of Life

Another benefit that lighting can have in historic sites as part of a placemaking process is that of beautification and aesthetic improvement of the place. Although people believed lighting has this potential, many pointed that the current lighting is not doing this for Naghshe-Jahan Square at all. One interviewee said, “well, light is naturally beautiful, and of course it can make places beautiful too, but I don’t think these tall lamp poles add anything to the

square". Another person said, "this place is beautiful, but really, the lighting has not made it any more beautiful". One tourist said, "I think lighting must be used to celebrate the beauty of this place".

Rogan et al. (2005) believe that one of the features of a site that makes it psychologically comfortable in relation to the sense of place relates to the visual enrichment of settings. Steele (1981) also argues that some visual aspects can result in a sense of place. In addition, Projects for Public Spaces (2007) have introduced four qualities of a successful public space, one being comfort and the image of the place in question. In this category, although they do not directly point to lighting, they argue that places should be visually pleasant and attractive, and these aspects will improve the image of the place among people and develop a sense of comfort. Gokhale (2013) believes that lighting has the potential to enhance aesthetic values and improve the vision of urban spaces, resulting in improved quality of life. In relation to Naghshe-Jahan Square, not only does the lighting fail to beautify the site at night, but the floodlighting also flattens all the architectural details and decorative tiles on the historic buildings. In some areas, the spectacular dome vanishes in the darkness due to the poor lighting, with the shop windows' lighting displays overpowering any visual attractiveness that the site might have to offer.

Lighting could however be used in a placemaking process to result in psychological comfort and improved quality of life.

12.3. Lighting Builds Emotional Attachment

The emotional attachment was amongst the most important features associated with lighting design in historic places. People love historic sites, and so they also expect to be able to see and reach them after dark. The interviewees emphasized that lighting could encourage feelings of emotional connectedness with a site. One said, "when you feel emotional about something precious, you place it in a bright position, I think the bright light contributes to an emotional feeling to it".

people in Isfahan did indeed express that they love Naghshe-Jahan Square as one of the most important heritage sites in their city and experienced emotional attachment as part of their identity, but they did so without stating that the lighting had helped in enhancing this sense. This could be clearly observed, as the lighting features did not even provide visibility and safety to an adequate extent in certain areas. Sime (1986) argues that spaces do not become places unless strong emotional ties are built between people and the setting. Cross (2001) also

counts spiritual connection as a sense in which people connect with places, explaining that this is built on emotional attachment. Shamaï and Ilatov's (2005) study of the levels of sense of place also includes emotional attachment as one of the levels. He argues that people need to feel emotionally and spiritually connected to their living places.

12.4. Lighting Attracts Attention

The findings reveal that one of the important effects of lighting in historic sites is the resultant increase in attention that the site in question can receive. A tourist laughed and said, "we don't know all the historic and tourist attractions in Isfahan, but we know we should visit whatever is lit". Another interviewee said, "well not all facades need lighting, but those which are important must have good lighting, somehow to attract people's attention, to tell people this one is important".

Bonn et al. (2007) explain that the physical conditions of a historic site play an important role in attracting visitors and encouraging them to visit the site again in the future, in addition to increasing the likelihood that they will promote the attraction to their relatives and peers. Although B. J. M. van der Aa's (2005) research is not directly related to lighting, they also point out that when a site becomes an important focal point for attention, specialists will increase public awareness in relation to its significance and preserving the site. With appropriate lighting installations, attention is drawn towards historic sites at night, and they are presented as landmarks and honored as gems of civilization, thereby reminding people of their significance. As a result, these sites become more recognized, loved, and cared for by people and the authorities. In addition, they are less prone to damage and graffiti, with even anti-social behaviors being reduced in and around these sites.

12.5. Making the Site Attractive and Exciting

Another point that should be considered in the lighting design for historic places is that it should add attraction and excitement to the site at night-time. The majority of the people mentioned that the current lighting scheme does not add any attraction to the site, while they also voiced their belief that lighting should bring something new and exciting to the site at night. One said: "The lighting here is really dull. It doesn't make anything here more attractive than it is during the day, I mean, it could make the place more attractive, couldn't it?". Another interviewee

submitted the following: “I really think lighting could make the space more exciting than it is now. The reason we come to Naghshe Jahan now is only because we love the site itself, but for sure the lighting isn’t something which motivates us, while I think it could be”.

While Bonn et al. (2007) do not directly point to lighting, they emphasize that the physical features within historic sites do influence whether the site can become attractive for visitors or not. If it is believed that these sites are facilitated with effective physical elements, this can result in more people visiting them and returning once more. Historic England (2019) emphasizes that it is essential to consider making a site enjoyable and vibrant through a lighting scheme.

12.6. *Lighting Should Provide Safety*

Safety is another aspect that lighting in historic sites should reflect. An interviewee stated the following: “I always only use the main streets to reach the square, although the historic ones on the southern side have lots more character. But you don’t know what you might see in the dark as you go through them!”.

Although safety is regarded as one of the very basic functions of light in any urban space, as Meier et al. (2014) explain, safety was the main and only reason for lighting urban spaces and streets until the 1970s, and so it is still important and requires to be taken into account in the construction of schemes for historic sites. Furthermore, Altman and Low (2012) regard the safety of space as being one of the parameters helping to cultivate a sense of place.

The findings of this study suggest that as well as providing actual safety, it is also important to make people experience a sense of safety in these sites. Narboni (2004) also refers to the feeling of safety as an important feature of lighting within spaces. If the site has too many dark spots and paths, or spaces are forgotten and provide a suitable environment for criminal activities, that site will be unsafe, and it will also feel unsafe. Therefore, as this research suggests that historic sites should have lighting to be accessible at night-time and open for people to move around in, they must be well illuminated to reduce anti-social behaviors and ensure that visitors feel that they are safe.

12.7. *Considering Gendered Issues*

One of the most interesting findings within this study was that lighting in these spaces should reflect the goal of gender equality. This research finds that

the level of lighting that allows women to feel safe is different from that of men. All groups of interviewees agreed that the users’ safety is an important feature that lighting must provide. However, all the female users made the claim that the lighting of Naghshe-Jahan Square does not consider female visitors to an adequate extent. One said, “this site is very busy which makes it safe anyway, however, while some parts of it are left completely dark, it still feels unsafe for us as females”. Even many of the male interviewees agreed that the site may feel safe for them but unsafe for female users. In fact, they all emphasized that there are too many spaces that are left dark, yielding a sense of a lack of safety for females. While several studies such as Narboni (2004), Cochrane (2004), Projects for Public Spaces (2007), Altman and Low (2012), and Blow (2018) agree that one of the important aspects of lighting is providing safety in general, only Johansson et al. (2011) highlight the issue of young women’s mobility is restricted or limited to certain areas during the night, notwithstanding the significant negative effects that this can result in. Thus, the presence of lighting may contribute to making them more confident in going outside after dark by increasing accessibility and safety.

12.8. *Considering Activities Occurring within the Site*

A lighting design for historic sites through placemaking must reflect the activities that take place on the site. People named many special cultural events, religious celebrations, and even political events as some of the special occasion gatherings to be held in Naghshe-Jahan Square (Figure 13). Davoudian (2019) raises the claim that lighting must be designed for people and to support their daily activities in Urban Lighting for People.

Through the observations and interviews, it became obvious that night-time picnicking is a very popular tradition amongst families and younger generations. People gather in open spaces with greenery and grass during the night-time to socialize and eat together. Although night-time picnicking is a favorite activity amongst the users of Naghshe-Jahan Square, the lighting is not designed to facilitate such activities. Many people were seen to even cover the short lighting poles in the site as they were causing glare, or they used portable lighting sources to light the darker areas. “Uses and Activities” is one of the four qualities that makes for a successful place, according to Projects for Public Spaces (2007). In fact, it is stated that activities are the main means by which a place can be structured, and when people’s activities are facilitated within a

place, this provides them with a reason to (re-)visit that place as well as the usual activities that take place in these sites. The findings suggest that the special events and occasions that may take place in these sites throughout the year also need to be considered. Accordingly, at a more general level, the lighting of historic sites must consider people and their activities in historic places.

12.9. Preventing Glare in Lighting

One potential result of lighting that this study emphasizes the need to avoid is that of glare. The majority of the people who were picnicking on-site

pointed to the lighting stands that lit the landscape of the site, stating that the light gives rise to an uncomfortable glare (Figures 15). Nearly every person interviewed pointed to the fact that there are so many visible light sources resulting in glare, and the associated inability to perceive the surroundings in a comfortable manner. Many complained that, while the overall lighting of the site is insufficient and dark, the light poles give rise to excessive glare: “We try to find a light to sit close to, but then it’s so glaring we have to cover it somehow”; “The light sources are too bright, in this dark place, they literally glare your vision and don’t let you see further on”.



Fig 12. Pedestrian Path to the Square, Lit Up only by the Light Coming From the Nearby Shops



Fig 13. Events Are Held in Naghshe-Jahan Square, such as Story Nights for Children



Fig 14. The Lighting Scheme for Naghshe-Jahan Square is not Set Up such that it Facilitates the Traditional Activity of Picnicking



Fig 15. Glare from Lighting in Naghshe-Jahan Square



Fig 16. People Covering the Lighting Feature with Children's Clothing as a Means of Reducing Glare

As Cline et al. (1997) note, glare is “the dazzling sensation of relatively bright light, which produces unpleasantness or discomfort, or which interferes with optimum vision”. Ludt, (1997) adds that there are three different types of glare, which include dazzling glare, discomfort glare, and disability glare. Vos (2003) explains that dazzling glare is the difficulty caused with vision through extremely bright visual scenes, usually caused by over-contraction. Jose (1983) states that glare results when the individual concerned experiences an irregular visual sensitivity to the intensity of ambient light, such that the person has difficulty adapting to dramatic changes in light and a slow recovery from glare results. Discomfort glare, as Bullough et al. (2008) describe, occurs when, in a dark space, a very bright light source results in visual discomfort and annoyance, with pain sometimes occurring. Vos (2003) also explains that this type of glare is the visual annoyance created by the distraction of light sources within sight. As Philips Company notes, in discomfort glare, the vision is not impaired, but the light source being too bright in the dark space results in an intense feeling of discomfort. It is also explained that disability glare results when too much brightness gives rise to serious impacts on visibility, negatively affecting the individual’s ability to see objects. Bullough et al. (2008) also cover disability glare, defining this as occurring when the visibility degree of objects is reduced as a result of an extreme bright light source in the field of view.

In considering the observation and interview findings from Naghshe-Jahan Square and linking them to different types of glares discussed in the literature, it is clear that disability glare constitutes the main source of problems. The light poles were highlighted as being the main issue. Specifically, the light sources were completely visible, affecting people’s vision.

13. CONCLUSION

This study demonstrates how lighting can be used as an effective feature in historic sites in the process of placemaking. Accordingly, the main results obtained from this study address two aspects; 1) what the benefits of turning space into place offer to the people, and 2) how the artificial lighting of a historic site should be in this placemaking process. These are concluded based on studying Naghshe Jahan Square’s lighting scheme and people’s behavior observation and their expressions in this site through interviews. The main results concluded from this study is as presented in the following table:

This study suggests that visual enrichment and economic developments were two of the most important results of turning spaces into places. Studying the findings shows that these effects are exactly similar to the benefits of lighting the historic sites which explain that lighting can be used as a tool for placemaking in historic places.

An important outcome of placemaking is that it encourages social engagement with particular sites within cities. Lighting historic sites during the night can attract people’s attention and encourage them to visit these settings while also facilitating the hosting of social engagements and gatherings onsite. Furthermore, by attracting increased levels of attention, lighting can breathe life into such settings and protect them from vandalism and antisocial behaviors. In other words, lighting previously forgotten sites can assist with reducing harmful behavior, enabling these to be supplanted by social gatherings and new experiences of the place within the context of the night. This evidence suggests that lighting historic sites can be used effectively within the placemaking process, benefitting people in various ways mentioned above.

Table 2. Conclusions

Results of Turning Spaces to Places through Placemaking	Influence of Lighting in Historic Sites	Placemaking Outcomes
Visual Enrichment	Aesthetic Improvement	
Economic Development	Economic Outcomes	
	Consider People’s Activities	
Growth of Social Engagement	Attract attention	Improve a community’s cultural, economic, social, and ecological situations, and the overall quality of life.
	Make attraction and excitement	
	Emotional Attachment	
Site Gains Meaning and Value	Prevent Glare	
	Provide Safety	
Amplify Identity	Consider Gender Issues	

This study points to the importance of turning spaces into places results in gaining meaning and value and amplifying identity to the people who visit the site. Emotional attachment is found as a possible result of lighting historic sites as a placemaking process. Additionally, the activities that all user groups may engage in must be considered in relation to the lighting design to ensure successful placemaking. These activities are part of what encourages people to visit the site, and include what they enjoy, so, given the principles of placemaking, lighting must facilitate those activities, whether they are all-year-round activities or relate to a special time of the year, such as a holiday.

Ensuring safety within the historic site is one of the most important aims that lighting must satisfy within the placemaking process, as is ensuring that visitors to the site are made to feel safe. An important finding of this research is that feeling safe differs in a gender-informed way, with women visitors often voicing a preference for brighter spaces than men. It is therefore the recommendation of this study that lighting should be crafted such that it respects the diverse wishes of different people in relation to lighting, enabling the site in question to be perceived as inviting for all.

The findings highlight that lighting features should not result in glare. Just as it is important to facilitate activities such as social gatherings or accessibility and safety, it is also important to ensure that any lighting installed is designed in such a way that discomfort experienced by visitors to the site is minimized as far as is practical.

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HOW TO CITE THIS ARTICLE

Zeini Aslani, SH., Mozaffar, R., Ekhlassi, A., Taghdir, S., Mozaffar, H. (2022). Placemaking in Historic Sites with Lighting Scheme. (Case Study: Naghshe-Jahan Square, Isfahan, Iran) *Int. J. Architect. Eng. Urban Plan*, 32(2): 1-21, <https://doi.org/10.22068/ijaup.665>

URL: <http://ijaup.iust.ac.ir>

