Lighting Design Principles for Placemaking in Historic Sites

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Declaration

I hereby declare that the work presented in this thesis has not been submitted for any other degree or professional qualification, and that it is the result of my own independent work.

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Abstract

This thesis identifies the various interrelated areas needed in the research and preparation of lighting design schemes for historic sites as facilitators for placemaking processes. In doing so, it firstly focuses upon placemaking as an influential process in enriching urban spaces. Ball (2014) identifies the international nature of placemaking which he views as the "process of activating new or existing public spaces to create that emotional connection". He explains that placemaking is understood as taking diverse forms that enable public spaces to function through design, programming, community empowerment, wayfinding, art, and whatever the needs of that particular community include. This thesis studies the different definition of placemaking through secondary research, and finally introduces a comprehensive definition of placemaking based on the finding in respect to lighting design as part of its contribution to knowledge. The thesis argues that historic sites should be seen as important infrastructures for placemaking in urban spaces. By linking the requirements of such sites and considering placemaking process obligations, the thesis develops lighting design principles for historic sites through the placemaking process. The design principles proposed in the thesis are supported by two case studies of UNESCO registered world heritage sites; the first is a best practice case study in lighting design while the second is significant in relation to its public lighting. Using ethnography research methods through observation, semi-structured interviews and questionnaires, the research identifies relevant experiences and opinions of local stakeholders, lighting designers and heritage experts. The data was then interpreted through thematic analysis which resulted to the presentation of the following arguments: Firstly, it argues that lighting in historic sites is an effective design feature which can successfully support placemaking goals. Secondly, according to this, it presents the historic site-specific aspects which deal with the authenticity of the site and the management factors, as well as people's vital role which generates from placemaking as essential considerations. thirdly, it suggests lighting design considerations and characteristics that need to be taken into account as essential aspects in historic sites through placemaking process. Together, these recommendations provide the basis of lighting design principles for historic sites through placemaking. This evolutionary focus is intended to guide lighting designers to

produce informed design decisions for historic sites and policy makers in heritage sites to develop lighting design regulation for such setting which will result in reaching successful placemaking processes.

To my shining passion, my wife whom it is impossible for me to stand here without her.

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Table of contents

*Lighting design principles for placemaking in
historic sites*
Table of contents

List of figures

List of tables

Chapter One.   Introduction

Today, more than half of the world's population live 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. Alliance (2007) takes the view that cities are understood through the design of urban space and the emphasis on design extends to heritage sites and the social activities organised among people within these spaces. Tweed and Sutherland (2007) also 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.

According to Ball (2014), placemaking is a process of planning, designing, managing, and programming, all done with the aim of developing shared spaces within cities. This is a series of steps that considers various aspects of the design process to build spaces such that they serve as places for people. As a creative process within the fields of design and urban planning, placemaking brings together people with different expertise to enhance a community's cultural, social, economic and ecological condition. In relation to this practice, Thrift (2006) points out that the concept of placemaking is fast spreading from its origins in academic geography to professions such as social anthropology, landscape architecture, architecture, environmental psychology and planning.

One of the essential elements of placemaking is the feature of urban spaces (Relph, 1976). 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 as part of the placemaking process. According to Rogan et al. (2005) people will feel at ease in those spaces that they feel a sense of belonging to, and so it is important to consider placemaking processes in developing features for urban spaces. Urban spaces and the features within them can therefore benefit from the placemaking process. Vukmirovic and Gavrilović (2020) study the potential of *placemaking* and present how it can affect sustainable urban facilities management and improve the planning procedures.

Gehl (2011) states that the built environment can shape social life and promote communication, with historic sites being an example of this environment. Similarly, as Lynch (1960) notes, historic sites and the elements of these have important characteristics that play a powerful role in the development of places within urban spaces. Gehl (2011) adds that the historical features within urban spaces and the social scope of the form of public space - such as the design of the space and its elements - regulate how public spaces function.

The Institute of Historic Building Conservation (2005) notes that historic sites play a vital role in the process of placemaking within cities in that they are associated with certain values, with these extending across the social, economic, environmental, public and cultural realms. On the basis of such observations, it is clear that the features within historic sites should be designed in accordance with the aims of the placemaking process.

Historic sites constitute the core of many projects engaged in with the aim of regenerating cities and urban spaces. The regeneration of these places can strengthen public experience, significantly improve the economy and result in the development of the broader region more generally (Porfyriou and Sepe 2017). Historic England (2019) points out that these sites must not be treated solely as historical objects or lifeless antiquities, but should instead be used as a means of generating activity.

The perceived significance of heritage places is important to communities and result in a sense of place, promoting a certain quality of life in the environment (Russel et al., 2011). It is therefore important to facilitate these spaces through the placemaking process, contributing to the sense of place experienced by people in these settings.

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. It should be borne in mind, however, that such sites work well as some of the main venues available for evening entertainment and social events (Rankel, 2014). Sandoval (2000) considers the importance of lighting for urban spaces at night-time and argue that lighting plays a vital role in improving the quality of urban spaces. Sandoval (2000) specifically argues, lighting is regarded as having the ability to facilitate different perceptions within public

spaces at night-time. Similarly, Pauley (2004) emphasises that artificial brightness is essential in terms of its ability to provide fresh experiences of urban spaces that are familiar from the daytime.

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 and Geissmar, 2007). 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 and, Geissmar 2007).

1.1 Definition of the problem and the need for principles

These issues notwithstanding, concerns in recent years regarding outdoor illumination have tended to relate to economic and energy-related considerations (Deleuil, 2009). An increasing awareness has emerged regarding the negative impacts that excessive illumination has on the environment and human health, with artificial light tending to be considered a source of environmental contamination (Brons et al., 2008; Challéat, 2010).

Lighting is more than a science in that it is also subject to design principles and can significantly affect the way in which people interact with each other and the spaces around them (Gardner, 2006). It is an integral component of social life and urban lighting constitutes an essential part of both social interaction and day-to-day activities (Davoudian, 2019), serving to attract people, to direct them and to enchant them within the urban context (Brandi, U. & Geissmar-Brandi, C., 2007). In working with light for urban spaces, it is crucial to consider the balance between functional factors and visual statements (Joels, 2006). The distribution of light within a space influences people's feelings, impressions, and reactions within the environment (Flynn et al, 1973), and so there is significant potential for lighting to be used for the betterment of individuals' psychological mood (Schmidt and Töllner, 2009).

While open spaces in cities can provide a place for social interaction amongst people regardless of the time of day (Edwards and Torcellini, 2002), the level of social engagement and contributions made by citizens during night-time tends to reduce as a

result of the darkness. The concept of night-time lighting for urban spaces is therefore considered an essential factor in engaging people such that they can make full use of such spaces at night (Sandoval, 2000).

There are a number of design guidelines and codes (Uchida and Taguchi, 2005, Ekrias et al., 2008; Johansson et al., 2014; Boyce, 2014) that include measurable indices to indicate the quality of the luminous environment and street lighting. However, the impact of urban lighting on human psychology and the basic mechanics of social engagement has not yet been addressed adequately. Narboni (2004) takes the view that urban lighting should comprise not only energy-related statistics and quantitative lighting performances, but also consideration of people's experiences and perception of the urban public space. In this regard, there needs to be consideration of the beautification of spaces, the cultivation of the feeling of safety, the cultivation of social involvement and the vitality of those within the space.

Night-time lighting for urban spaces has become a vital infrastructural component of developed countries around the world, having a wide scope and constituting an important category within the area of lighting design generally. Davoudian (2019) outlines some of the lighting design aspects within urban lighting that have formed the focus of much existing research, with examples including urban lighting for drivers, lighting for visual performance, lighting's influence on people's sense of safety within neighbourhoods, architectural building lighting, urban monuments and the aesthetic aspects of lighting within urban spaces.

Despite the importance of the lighting of historic spaces at night-time and the various benefits associated with this, there is an absence of guidance on lighting design principles for historic sites, although there are several studies focusing on the energy efficiency of lighting in urban spaces. Kocet (2011) provides a study of the urban lighting of old cities and historic sites, focusing on the use of new technologies for saving energy and lighting efficiency. Salata et al. (2015) consider energy optimisation and the maintenance of lighting for historic buildings and take the view that considering the economic aspects of lighting is vital. And Loron (2014) presents a framework on utilising Building Information Modelling (BIM) systems to support

energy efficiency in historic buildings through reducing electricity consumption for lighting.

There is some existing research on the effects of lighting on people and the cultural aspects of this phenomenon. Zielinska-Dabkowska and Xavia (2018) consider the effects of LED illuminations on the visual appearance of historic sites and individuals' perception of these settings. Kopanari et. al. (2019) focus on lighting design techniques and strategies for historic settlements with a view to attracting tourists and promoting cultural reinforcement. Di Salvo (2014) presents a case study on an Italian heritage site, offering a design system designed to increase the authenticity of the architecture and the symbolic significance of its history.

Although lighting can play an effective role in the placemaking process in relation to historic sites, there is an absence of research on parameters that should be considered as part of the placemaking process in relation to the use of lighting in historic spaces, and it is this gap that the present research addresses. This is done through the introduction of lighting design principals for historic sites within the context of placemaking, as well as investigation of the important placemaking parameters that need to be considered in relation to lighting design projects for these sites.

1.2 Research questions

What are the design principles for lighting historic sites in the placemaking process?

In considering this question, three sub-questions are addressed:

- What are the benefits of developing a lighting scheme through the placemaking process in historic sites?
- What aspects of historic sites must be considered to facilitate a successful placemaking process for these sites?
- What aspects of lighting must be considered in the placemaking process for historic sites?

1.3 Research aims and objectives

This research is conducted with a view to **developing lighting design principles for historic sites through the placemaking process**.

This research considers the following two main objectives:

1) To identify and document relevant experiences and opinions of people relating to lighting in historic sites. There are three main groups to consider: local people and visitors (consumers), Lighting Designers and Heritage Experts.

2) To analyse lighting features of historic sites through consideration of two case studies: Saint-Avit-Sénieur in France, which has a professional lighting scheme, and Naqshehe Jahan Square in Isfahan, Iran, which is lit only by means of public lighting. Both sites are registered World Heritage Sites.

The present study therefore considers the role of lighting in historic sites as a placemaking process and identifies the most central aspects that should be considered when designing lighting schemes for these spaces such that they can be transformed into places for people. These findings are offered as guidelines for lighting designers working on historic sites in relation to the consideration of placemaking. Policymakers working with historic sites may also seek to use these findings in setting regulations for the lighting of historic sites.

1.4 Methodology and structure of the thesis

The introduction highlighted the significance of placemaking, and the important role historic sites play in relation to this process within urban spaces. It also made clear the importance of lighting as an effective design feature for the placemaking process as applied to historic sites, and introduced some of the related research on lighting design. This survey made clear the lack of consideration as to how lighting should be used within historic sites to turn these spaces into places. The central questions and aims of this research were formulated accordingly.

In order to respond to the research question, this research pursues the following methodology; initially, it identifies the dependant and independent variables through secondary research. This helps to gain a full understanding of each variable and define the relevant terms. This is achieved through Chapters Two, Three and Four. By studying similar projects and defining the relevant terms, the next chapter argues for the most appropriate methods in relation to the research aims. Accordingly, ethnographical research methods are presented as the most appropriate to respond to the research questions and to support the community-focus nature of placemaking. The research methods are used in two different case studies that are described in

Chapter Six. The data collected is subsequently interpreted through a thematic analysis, of which the findings are presented in Chapter Seven. In the next chapter, the findings are discussed and compared with relevant literature. Finally, the research questions are responded to in full in the concluding chapter. Accordingly, each chapter contributes to one part of the research stages which builds the following structure:

Based on the research question, three variables are isolated and considered. Chapter Two focuses on the first independent variable, which relates to the existing literature covering the concepts of space and place and placemaking to understand factors relevant for public spaces and what needs to be considered in making places for people efficient. It begins by defining the terms so as to facilitate a deeper understanding of the concepts. The analysis then focuses on the literature defining how lighting can facilitate a sense of place in public spaces. Chapter Three presents the literature in relation to lighting in urban spaces as the dependent variable of this research. It reviews the use of lighting through history as an important factor in urban design. This review allows for a deeper understanding to be gained of the developmental processes light has undergone and the factors that have affected how light has been used differently across time. This review also considers the positive and negative aspects of using lighting in urban spaces at night, this being a central environmental aspect to consider in working with light. Chapter Four reviews the literature relating to the second independent variable of historic sites and their values. It also introduces UNESCO World Heritage Site criteria and the advantages and disadvantages of this scheme, as well as presenting the features of the literature that pertain to the lighting of historic sites and how lighting effects such sites.

Chapter Five outlines the inductive approach of the research strategy adopted before explaining the quantitative method, outlines the various ethnographic methods used to address the research question, including observation, semi-structured interviews and questionnaires, and the research design, including the case studies. It also introduces thematic analysis as the data analytic method utilised within this research. Chapter Six introduces the two case studies chosen for this research after outlining the concept of best practice. It then explains the data collection process as applied across the two case studies.

Chapter Seven then presents the findings of the primary research, with this including 1) the information gathered in the best practice and second case study; and 2) the thematically analysed findings from the interviews, observation, and questionnaires. Chapter Eight presents the interpretations arrived at through the thematic analysis of the findings and discusses the findings in relation to the relevant literature. This includes the three main themes with the relevant subthemes. Chapter Nine concludes the research by responding to the research questions as presented in the introduction. It also outlines the main contributions of the research through presenting the relevant definitions, frameworks and lighting design principal diagrams. Lastly it presents the limitations and future research recommendations for this research.

Chapter Two: Place, Space and Placemaking

2.1   Introduction

This chapter considers the importance of the key concepts of 'place' and 'space' in relation to the literature, and across various disciplines to analyse how these factors pertain to the public space. The constitutive elements of 'place' and 'space' and key to understanding the tangible and intangible aspects of placemaking, both of which are key to understanding how lighting and heritage can be connected to placemaking strategies and activities.

The word "place" is used in different ways in everyday life such that there are often differences with the specific way in which it is used here. Accordingly, this chapter begins by defining the terms to gain a deep understanding of what needs to be taken into account in considering the concept of place, which, in the present research, pertains primarily to how aspects of lighting and heritage are perceived. After defining "place", the term "sense of place" and people's different connections with place is reviewed through the literature. This is important as it clears how we can design spaces to facilitate people feeling a sense of place within them, and the different connections that could be considered in the design process. Later, the concept of placemaking which is one of the independent variables is defined. Then, historic sites and their important role in placemaking is studied while urban regeneration is reviewed. Afterwards, the some principles which are found to facilitate placemaking and the important aspects which result to placemaking in urban design is studied.

2.2   The definition of "place"

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 and Altman, 1992). In this regard, places can inform human history both individually and collectively: individuals raised in a particular part of the world with specific cultures often differ from others raised in a different place in terms of their behaviours, values and attitudes.

"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 and 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 individual's connections with a physical setting that give rise to meaning, whether individually or collectively (Sime, 1986). Canter (1991) also considers the term "place." Canter began his research as an architectural psychologist, focusing on the interactions amongst people and buildings. He also studied how people made sense of the large-scale environment, notably cities. He espouses the view that a place is a "[…] unit of 'environmental experience', a convergence of cognitions, affect and behaviours of the people who are experiencing them" (Canter, 1991). In addition, Amos Rapoport, a well-known architect and one of the founders of Environment-Behaviour Studies (1990), argues not only that places constitute the physical features of a setting, but also that they comprise meanings and messages that people receive and interpret based on their own experiences, inspirations and expectations. A place is therefore a combination of people's principles and values such that it is associated with the occupants' values and sense of meaning (Sime, 1986). Christian Norberg-Schulz, another architect, author, educator and architectural theorist, also considered the definition of this term. Between the 1970s and 1980s, he moved from the analytical and psychological aspects of his earlier writings to the phenomenology of place, becoming one of the first architectural theorists to raise the relevance of Martin Heidegger for this field. He also influenced the revival of the spirit of place in urban and environmental studies, most significantly amongst architects (Samalavicius, 2012). In this regard, he emphasised the importance of the physical features of settings in defining "place," drawing comparisons between places and spaces that also made reference to character. For Norberg-Shulz, the existential aim of architecture was changing spaces to places, and so architects were viewed as requiring

to pay attention to discovering the meanings that a setting can present: it is the architects' duty to deliver physical characteristics in designing spaces, yielding an structure in which to live and that promotes the physical and mental wellbeing of its occupants (Norberg-Schulz, 1985).

All of the above definitions highlight how a place not only comprises its physical characteristics, but also the experiences and connections that a space shares with people. They emphasise the importance of designers' and architects' roles in developing spaces that can build these connections and develop psychological attachment to a place through its physical characteristics. Design in general, and specifically lighting design, can give rise to such attachments to a space, with such practices enabling spaces to transform into places (Nasar & Bokharaei 2017).

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 but 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, 1976). In addition, Canter (1977) presents a similar three-part classification of place, identifying places as a result of connections among physical characteristics, actions and conceptions. He also adds that more attention should be paid to the effects of physical characteristics on peoples' behaviours and mental processes. However, he also states that individuals conceptualise places in different ways and so it is crucial to study places from the perspective of those who make use of them. Although Relph and Canter are associated with different disciplines - the former a phenomenologically oriented humanistic geographer focusing on authenticity and the particularly of specific places, the latter a psychologist considering "place" as a technical term (Canter, 1988) - both seek to identify the elementary components of place and they outline theoretical models of place that include important similarities (Groat, 1995).

2.3 Different types of connections within places

Sime (1986) states that the dimensions of a place are forged through people's embodied connections with a physical setting that give rise to meaning, whether

individually or collectively. In other words, places arise as the result of people's connection with spaces. Accordingly, Cross (2001) categorises these connections across six forms. A person can be connected to a place through one of these relationships, but many people are likely to experience multiple connections with a place. These connections, which can be biographical, spiritual, ideological, narrative, commodified or dependent, can be built over time and may change. The table below, from Cross (2001), presents these types of connections, outlining the type of bond and the process that each relation engages with:

Table 2-1 Connection with place by Cross (2001)

Relationship	Type of Bond	Process
Biographical	historical and familial	being born in and living in a place, develops over time
Spiritual	emotional, intangible	feeling a sense of belonging, simply felt rather than created
Ideological	moral and ethical	living according moral guidelines for human responsibility to place, guidelines may be religious or secular
Narrative	mythical	learning about a place through stories, including creation myths, family histories, political accounts, and fictional accounts
Commodified	cognitive (based on choice and desirability)	choosing a place based a list of desirable traits and lifestyle preferences, comparison of actual places with ideal
Dependent	material	constrained by lack of choice, dependency on another person or economic opportunity

In designing spaces, architects and designers need to take these connections into account and consider different ways of developing as many as possible of these connections between the space and individuals. Although part of the connection depends on every person's individual experience, physical features of the environment do have the potential to influence individuals' psychological connections with the space. Steele (1984) outlines other relationships between people and places:

• The relationship among individuals and settings is transactional: people take and give something, or do something, either positive or negative, with or to their surroundings. These behaviours can change the impact of the setting on people.

• The concept of place is not just physical but may also be psychological or interactional. Environments comprise a blend of physical and social features. The sense of place is an experience formed by the environment combined with what an individual brings to it. People therefore create their own place to some degree, and places do not exist independently of people.

2.3.1 Relph's concept of "Placelessness"

During the 1970s, human geographers, in particular Yi-Fu Tuan (1974), Anne Buttimer (1976) and Edward Relph (1976), expressed philosophical and experiential dissatisfaction with the weakness of definitions offered in respect of "place." One result of this dissatisfaction was the contribution made by Edward Relph's book *Place and Placelessness*, which is still an important theoretical and practical resource within the field (Seamon, 2008). Relph developed his interest in the concept of place as early as 1996 with his doctoral dissertation, focusing on the links between Canadian national identity and the symbolic landscapes of the Canadian Shield, particularly those represented by lakes and forests (Relph 1996). It was during his PhD research that he first became disappointed with the lack of philosophical grounding underpinning the definition of "place." He believed that the theoretical pillar of the discipline was meaningless and incomplete, most notably in relation to the value of places in humans' everyday lives. He ultimately decided to change his PhD topic such that it took a wider view of nature and the meaning of place in relation to the vital role that it plays in people's lives.

According to Relph (1976), places can be experienced either authentically or inauthentically, (concepts drawn from existential and phenomenological philosophy). An authentic sense of place is "a direct and genuine experience of the entire complex of the identity of places—not mediated and distorted through a series of quite arbitrary social and intellectual fashions about how that experience should be, nor following stereotyped conventions" (Relph, 1976, p.64). People can therefore build a sense of place either consciously or unconsciously. Thus, due to the frequent use of a

space, a characterless urban neighbourhood can turn into as authentic a place as Hellenic Athens, which, for Relph, would be generated consciously. Here, he speaks about the concept of "placelessness" when he argues that, in the modern age, an authentic sense of place is slowly overshadowed by a less authentic attitude: "the casual eradication of distinctive places and the making of standardized landscapes that results from an insensitivity to the significance of place" (Relph, 1976, Preface).

Relph argues that placelessness comes from the concept of "kitsch" - a naive tolerance of mass values or techniques - with the overriding concern with effectiveness being the major concern of this style. This has an overall effect manifesting as mass communication, mass culture, and central authority, with this being the "undermining of place for both individuals and cultures, and the casual replacement of the diverse and significant places of the world with anonymous spaces and exchangeable environments" (Relph 1976, p.143).

In *Place and Placelessness*, Relph reviews spaces and how they relate to places. He suggests that a space is a container or an isometric plane that includes places. But he suggests that, for studying the connection between space and a further experientially based sense of place, it is also important to study how spaces feature in people's experiences.

Although he takes the view that there are numerous kinds and intensities of spatial experience, he describes an experimental structure grounded in "a continuum that has direct experience at one extreme and abstract thought at the other" (Relph, 1976, p.9). On the one hand, he categorises modes of spatial experience that are unconscious, physical, and instant, pointing to pragmatic, perceptual and existential forms of space. On the other hand, he also categorises modes of spatial experience that are more intellectual, standard, and intangible, naming, for example, planning space, cognitive space and abstract space. Although the spatial modes that Relph presents can each play a specific part in daily experience, he stresses that, in reality, they are not equally exclusive, but all have a role in human spatial experience as a lived, indivisible whole.

2.4   Sense of place

When the term "place" is used in the context of a 'sense of place,' it refers to more than a geographic location. It also refers to the setting together with many other features lending a unique character and meaning to the setting (Lutts, 1985). The concept of 'sense of place' is used in identifying the bond between people and places, as well as the attachment to and meaning of places. According to Najafi and Shariff (2011), a sense of place is usually referred to as an overarching impression pertaining to the basic ways that individuals feel about places, and the perceptions and values they associate with them.

The sense of place is defined across several different disciplines (Steele, 1981; Tuan, 1974; Jackson, 1994; Hummon, 1992), some of which consider how lighting can contribute to a sense of place. For instance, in environmental psychology, the sense of place is the particular experience of a person in a particular setting (relating to feelings that are stimulating, excited, joyous, expansive, and so forth) (Steele, 1981). This is relevant to the present research, as lighting design can also influence emotions, mood and cognition, as well as atmosphere and spatial impressions (Custers et al., 2010). Because this research focuses on how lighting schemes can influence people's perception of environments, there is a clear link to environmental psychology. As an example of research considering such influences, Flynn et al. (1979) contemplate how lighting can affect people's environmental impressions, concluding that this is relevant for subjective evaluations of the environment, perceptual clarity and spaciousness.

Stokols (1990) argues that environmental psychology has changed to an individual research field in recent decades, with physical environments influencing people's behaviour as well as their physical and emotional wellbeing, whether in the short-term or the long-term. Riley (1992) mentions the emotional and functional aspects of space that have to be taken into account by architects and designers. According to Stokols and Shumaker (1981), the goal of designing spaces is not only facilitating everyday activities, but also cultivating symbolic and influential qualities to attract more people to places.

This emphasis upon the experiential quality of designed spaces can be understood from the perspective of measuring the overall quality of an environment, with such

evaluations having become part of place-marketing within urban planning and tourism. The richness of the psychological effects of spaces and the associated socio-cultural experience, as well as physical facilities, security, and performance, are interwoven in contemporary evaluations of place. In addition to these measurable constituents, the 'experience of place' is also regarded as one of the elements most important to a sense of place amongst environmental psychologists. In this regard, Steel (1981) defines the latter as a specific experience of an individual within a specific environment. Experiencing stimulation, joy, excitement and expansion in an environment results in a sense of place in relation to an environment. He also emphasises that it is the spirit of a place and its character that results in a sense of place. Designing spaces such that these aspects are considered is therefore essential.

From the literature reviewed, it is clear that theorists concur that places are not mere objects. Instead, places are understood as being produced through the meaningful events of real experiences gleaned through the senses. This encourages an understanding of 'place' as an overall sensual experience (Shamai, 1991). In designing spaces, all of the senses should be considered as a mode of connecting space and embodied experience. In a similar way, Lynch (1984) argues that environments that do facilitate a 'sense of place' allow for a positive relationship to emerge between humans and places. He explains that a place must have identity and be recognisable in order to create the sense, which then leads to place attachment.

Shamai (2005) believes that a sense of place is a combination of three components: the location, the landscape and personal involvement, with these three elements requiring to interact together in order to give rise to a sense of place. Similarly, Rogan et al. (2005) argue that a sense of place has an impact on whether an environment is psychologically comfortable. They specify the three variables of sense of place as being 1) legibility; 2) the perception and preferences of the visual environment; and 3) the utility of the environment in relation to human purposes.

Shamai and Ilatov (2005) also count three levels relating to a sense of place. The first relates to feeling a sense of belonging to a place; the second level to feeling a sense of attachment; and the third to feeling committed to a place. They also explain that, for a higher quality of life, people need emotional and spiritual connections to their living

places. In other words, people feel their needs satisfied through emotional relationships and identification with their living place.

The present research also relates to the discipline of the history of landscape architecture, focusing as it does on how lighting can be used to cultivate a sense of place in historic architectural sites. In this discipline, a sense of place is defined as "something that we ourselves create in the course of time. It is the result of habit or custom […] A sense of place is reinforced by what might be called a sense of recurring events" (Jackson, 1994, p.108). This research focuses on historic heritage sites within the landscape of cities. Based on this definition, a suitable lighting scheme can create such a sense of place over time, as previously noted, by facilitating habits and customs. An illustrate example comes from Lionel Basseris, who designed a lighting project in Saint-Avit-Sénieur, the French historical site considered in an in-depth manner later in this study. His design was inspired by the history of the site's landscape architecture features. With this lighting scheme, he encouraged people to engage in greater numbers of gatherings.

Another discipline that considers the sense of place is Sociology. David Hummon (1992, pp.262), in *Community Attachment: Local Sentiment and Sense of Place*, explains: "By sense of place, I mean people's subjective perceptions of their environments and their more or less conscious feelings about those environments. Sense of place is inevitably dual in nature, involving both an interpretive perspective on the environment and an emotional reaction to the environment […] Sense of place involves a personal orientation toward place, in which ones' understanding of place and one's feelings about place become fused in the context of environmental meaning." This definition is also relevant to the present research, it having been shown that lighting can influence people's perception of their environment (Custers et al, 2010).

There is significant overlap amongst elements such as behavioural obligations, emotional bonds, affiliation, pleasure and belonging, all of which tend to be considered as related in theoretical accounts. For instance, Cuba and Hummon (1993) describe emotional bonds and relationships with places as features of identity, while Altman and Low (1992) use these same features to describe attachment. Brown and

Perkins (1992) describe attachment as involving behavioural commitment and emotional bonding, which is similar to the emotional connection and fulfilment of components involved in a sense of community (McMillan and Chavis, 1986). Shamai (1991) takes the view that belonging/affiliation and bonding are different concepts, whereas Puddifoot (1995) classifies these as similar characteristics of community identity without distinguishing them.

Related to a 'sense of place' are the concepts of identity, place attachment and sense of community, which are less clearly articulated in Hummon's work. Hummon (1992) takes the view that one's sense of place is an individual term with certain subparts. He describes five types of sense of place or community attachment: ideological rootedness, rootedness that is taken for granted, place relativity, place alienation and placelessness, with sense of place relating to how attached a community feels to a space.

Cross (2001) presents a revision of David Hummon's typology to include: cohesive rootedness, divided rootedness, place alienation, relativity and placelessness. Each type can be described by a person's level of attachment, identification and involvement with the community, past experiences and future expectations, and their assessment of the place. Cross takes the strongest type of community attachment to be rootedness. Alienated people usually have a negative evaluation of the place in question, often struggling to identify with it. Some people experience alienation from a place as a result of having been moved by force from a place where they were rooted to a place such that this feeling is not present. Placelessness is the final category of the levels of community attachment and is described as a deficiency in emotional attachment such that there is no identification with particular places.

When people engage in social activities within their environments, they tend to feel a stronger sense of place. Canter (1979) argues that people's desire to engage in social activities is to be attributed to the strength of the sense of place. Steele (1981) also emphasises the important role played by sense of place in relation to people's connections with a place, stating that it contributes to feelings of security and attachment in relation to the place in question.

The extant literature (Cattell, 2001; Giuliani, 2003) indicates that people seek to care for those places to which they feel attachment and that they have a strong sense of. Peterson, and Saarinen (1986) highlight that local symbols can reflect and enhance a sense of place. While certain research studies, such as Relph (1976) and Pred (1986), argue that long-term interaction with a place results in an increased sense of that place, Tuan (1990) takes the view that one's sense of place can be experienced significantly faster, being similar to love at first sight.

Arguing for a processual understanding, Gussow (cited in Relph 1976) explains that there are different stages to experience a sense of place: 1) familiarity with a place, where the person is in a place without understanding its meanings; 2) ordinary familiarity with the place, where the experience is unconsciously perceived in cultural - rather than personal - ways (such that people experience a strong sense of engagement with the place and contribute to social activities, engendering a certain level of attachment with the space); 3) profound familiarity with the place, such that the 'existential insideness' of an individual is engaged unconsciously, integrates the individual with the place and gives rise to feelings of attachment (Gussow, 1971).

2.4.1 The phenomenology of place and the sense of place

Phenomenological literature provides a useful starting point for understanding the nature of the emotional relationships between people and places, offering a rich theoretical basis for study (Manzo, 2003). In contrast to mental construction and abstraction, phenomenology is regarded as a 'return to things' (Husserl, 1983). Manzo (2003), writing in relation to the area of urban studies, claims that phenomenology emphasises the experiences people have and the meanings that are conveyed by places through the expressive quality of things in their own terms. He also takes the view that, in the phenomenology of place, the most important element influencing perception is experience. Gussow (1971) also highlights the importance of people's experience within a setting, explaining that it can turn every space into a place for people.

In architecture, phenomenology is explored through humankind's ontological character and 'being-in-the-world' as a crucial component of continuation (Manzo, 2003). Phenomenologists therefore argue that, for architecture and urban design, the

'existential space' is a central and crucial concept (Sime, 1986), it being in the design of spaces of being and spaces of attachment that we readily see the importance of what Relph (1976) refers to as the "fusions of human and natural order." According to this analysis, various design characteristics of environments can play a role in building an emotional relationship and developing positive perceptions among people within a space, cultivating meaning through enhancing their experience within the space. Lighting, as a specification of urban spaces, can play an important role in enriching the meaning of a space in relation to the experiences of the individuals within that space.

Relph (1976) maintains that "places are the significant centres of our immediate experiences of the world." He argues that places play an important role in that they have the power to impose order on human meanings, experience and behaviours. He also explains that places should not be understood as including only cities and towns, and should instead be understood as running the gamut from a small room to a continent.

Phenomenologists such as Relph have sought to highlight the complexity associated with conceptualising a 'sense of place,' pointing to lack of specificity associated with the concept. Barker (1979) also makes this point in defining a 'sense of place' as one of the most intangible concepts. He takes the view that there requires to be a multifaceted study to discover what makes a place real (in the sense of being physical and felt). As noted above, different disciplines have sought to investigate 'sense of place' across environmental psychology, sociology and even geography. Within the latter, Tuan (1990) describes the term "topophilia" as referencing a sense of place. For phenomenologists, the 'sense of place' refers to one's emotional relationship with a place by understanding its meanings and symbols. They regard place as being brought into existence when people experience a part of the setting through their senses. Certain similar phrases, such as "character of place" and "spirit of place," are also used by phenomenologists to clarify the concept of sense of place. Relph (1979) also points out that the 'sense of place' constitutes the ability to identify places. These identities can be created and emerge over long-time relationships among people and places. Relph (1976) emphasises the role that customs, myths, symbols and ritual support play in strengthening one's sense of place. In relation to the present research, it is

important to consider how lighting can be used to create such bonds among people and spaces to strengthen the spirit and sense associated with a place.

2.4.2 The different scales of sense of place

Stedman (2002) defines the 'sense of place' as a group of symbolic meanings, attachment, and pleasure associated with a spatial environment. Surveying the literature more widely yields a range of emphases placed on this concept. Hummon (1992) distinguishes different types of *senses* of place in his research on community sentiment, identifying rootedness, alienation, relativity, and placelessness. Hummon also isolates an individual's satisfaction, identification, and attachment to groups, with these being taken as giving rise to different types of sense of place.

Focusing upon the relational aspect, Cross (2001) regards a 'sense of place' as a relationship between a place and social activities. He elaborates on six different relationships with places, these being biographical, spiritual, ideological, narrative commoditised and (being) dependent upon people. Shamai (2005) also postulates three levels, with these pertaining to feeling belonging to a place, feeling place attachment and feeling commitment to a place. He also taxonomises this categorisation across seven levels:

1. Having no sense of place;
2. Awareness of being situated in a place (such that the individuals concerned identify the symbols, but do not yet have any emotional relationship with the place);
3. Belonging to a place (such that the individuals concerned have some sort of emotional connection with the place, differentiating the various symbols and respecting them);
4. Attachment to a place (such that individuals concerned have a strong emotional relationship with the place, which they view as having meaning; special identities and characteristics associated with the symbols are identified and loved by the individuals concerned);
5. Identifying with the goals of the place (such that the individuals concerned are integrated with the place and the aims of the place are identifiable and known;

the individuals not only respect these aims but there is an alignment between them, resulting in a strong attachment to the place);

6. Involvement in a place (such that people engage actively in the place, attempting to offer their own resources to the place through the investment of their money, time, or talent in becoming involved with activities within the place);

7. Sacrificing for a place (with this manifesting through the individuals' deepest commitment to the place, sacrificing significant attributes and commodities such as wealth, liberty, or even their lives).

2.4.3   The factors contributing to forming a sense of place

As the combination of physical and social characteristics constitutes the environment, the connection among people and the environment is transactional. This means that people give something to and take something from a place, whether this exchange is positive or negative. Notwithstanding Steele's (1981) claim that many different people claim to have the same experience of a sense of place, it is important to highlight the cultural and social basis for such similarities. People with different experiences, inspirations, and backgrounds are likely to experience a place in diverse ways. As an example, consider the fact that many diverse people who visit Imam Reza's shrine in Mashhad, Iran, experience a similar spiritual connection with the place, with this being true even among people who are non-religious. On the other hand, while Naghshe-Jahan-Square in Isfahan, Iran, is a primary destination for a large number of tourists nationally and globally, for those who have lived within an Iranian culture and grown up in spaces with blue tilework in mosques, it is not only a leisure-related destination but also serves as a source of spiritual attachment.

The term "spirit of place" is a translation of the Latin genius *loci* (Relph, 2007). As with many cultures, the Romans believed that the world was a sacred space filled by a pantheon of gods and spirits, with each form of environment, such as forest groves, rivers, villages and towns, being the home of a god, who, by his presence and actions, gave identity to that place. With the growth of civilisation, these spirits of places and gods lost their influence and power, and so, in the modern era, the phrase "spirit of place" has a secular meaning that refers to the unique identity of a space. Today, the

spirit of a place is often connected with natural landmarks or extraordinary built forms, with places such as Venice and, within it, St Mark's Square, or Lower Manhattan and most of the old towns of Provence, the Rocky Mountains and Machu Picchu all being regarded as having a powerful spirit. A place that has a unique spirit or identity is generally regarded as attractive. Relph (2007) states that the sense of a place is usually taken to refer to what he describes as the spirit of a place, although it should be used for "… the ability to grasp and appreciate the distinctive qualities of places." For Relph, the two terms are highly interconnected, with a space having a strong spirit of place often giving rise to a powerful sense of place, and a community with a powerful sense of place having more potential to form a significant spirit of place. He nevertheless maintains the distinction between the two terms, believing that this will help in identifying and designing places that are virtual and real.

Alexander (1979) argues that the physical features and qualities of a setting not only define the kind of environment, but also contribute to the associated meanings perceived by people. He points to characteristics such as materials used within local buildings, the colours and shapes used within a space, scale, harmony, order and picturesqueness, all being important features that can enhance the meaning associated with a space. He uses the enigmatic phrase "the quality without a name" to describe places identified as attractive and distinctive such that it is not quite possible to specify why they are perceived that way. He also suggests that the ability to create this elusive quality has been pushed aside by the rational and placeless processes of modernism.

Steel (1981) highlights that there are some important environmental features that can help in developing a sense of place. There is the size of the environment, the scale and the proportion of the space, the visual diversity, and, in other terms, the distances and textures used in the setting, together with the ornaments, colours, smells, sounds, and even the temperature of the environment.

The cultural and social backgrounds of people engender different lenses through which places are understood. In this way, identity, history, religion, memory, education, social class, ethnicity and occupation all influence the experience of a given place (Buttimer and Seamon, 2015). A sense of place can occupy the imagined and the real,

and a place can be one of fantasy, mystery, and pleasure, just as it can be one of feeling of safety and liveability (Altman and Setha, 2012).

Tweed and Sutherland (2007) argue that cultural heritage within urban spaces plays an important role in societal and community-related wellbeing among people. Relatedly, the Council of Europe has developed a treaty for agreement on the topic of cultural heritage, this being the Council of Europe Framework Convention on the Value of Cultural Heritage for Society (CoE, 2005). This treaty emphasises the significance of cultural heritage for frameworks of sustainable development and the necessity of widespread public involvement in debates about cultural heritage. The perceived significance of cultural heritage is related to places that are important to communities and result in a sense of place contributing to the quality of the environment in which people live and work (Russel et al., 2011).

2.5 The Definition of Placemaking relevant to lighting

Palermo and Ponzini (2015) argue that there is no agreement on a definition of placemaking. Courage and McKeown (2018) also argue that placemaking is a vogue, poorly understood and a contested term amongst urban literature. According to Greg (2021), while there are different definitions, the majority focus on narrow aspects of placemaking as a physical environment intervention of a place. This is while he believes placemaking also engages social aspects which should be equally considered.

Ball (2014) explains "Placemaking, which can take many firms and include a range of activity, activates public spaces through design, programming, community empowerment, wayfinding, art, marketing – whatever is needed for that particular community. Placemaking is contextual and situational, and whether the project begins with a community's needs or a specific location, it will require a unique recipe."

According to Rethink Urban which focuses on improving safety, wellbeing and quality of life in communities, 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 organisations - including professionals, elected officials, residents, and businesses - to improve a community's cultural, economic, social and ecological situation. It is a creative but intentional process that is associated with design and urban planning. However, little has been

said about the relationship between urban planning and placemaking, notwithstanding its complex history.[1]

In describing placemaking, Snyder (2011) said: "Neighborhoods, cities and regions are awakening to the importance of 'place' in economic development. They are planning for a future that recognizes the critical importance of quality of life to attracting talent, entrepreneurship and encouraging local businesses. Competing for success in a global marketplace means creating places where workers, entrepreneurs, and businesses want to locate, invest and expand. This work has been described as a 'sense of place' or 'place-based economic development' or simply 'placemaking'.

Kelly et al (2017) used quality of place (QOP) to refer to placemaking synonymously. They explained that QOP focuses on the attributes of the physical space rather than outcomes of individuals in that space. They referred to Fischer's (2014) announcement on the city's new placemaking economic development strategy saying, "quality of place creates quantities of opportunities".

More sensory and intangible elements of placemaking can be traced back to the work of, Jane Jacobs (1961) and William H. Whyte (1980) introduced to the framework of designing cities *for* people, moving beyond shopping centres and vehicles. They focused upon projects that highlighted social and cultural activities for lively neighbourhoods, designing public spaces that facilitated interaction and sensory experience. Jane Jacobs was an American-Canadian activist and writer who transformed urban planning through her work on American cities and public organising. In this regard, she is often considered the most important thinker in urban planning to have argued for the primacy of embodied experience and sociability. She challenged the concepts of wholesale replacement of urban neighbourhoods with high-rise buildings, pointing out the loss of community expressways. She took the view that cities are living ecosystems and developed a systematic perspective of cities' elements individually and as part of an interrelated system.[2]

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[1] http://rethinkurban.com/placemaking/
[2] https://www.thoughtco.com/jane-jacobs-biography-4154171

In this regard, the different elements that make up a city - such as the people, neighbourhoods, parks, streets, the government and the economy - all work together and are connected to each other, as with organs in the human body (Wekerle, 2000). Jacobs believed in planning based on the neighbourhoods' wisdom, taking a bottom-up approach to arrive at the best design for each location. She supported mixed-use neighbourhood 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. She also defended the concept of protecting and renovating old buildings instead of demolishing and replacing them.[3]

In *The Death and Life of Great American Cities* (1961), Jacobs focused on the physical features of urban spaces as the basis of the street ballet, explaining that the following four conditions required to be met in order for a suitable performance space to result (Wekerle, 2000):

1. Neighbourhoods should be built in a multi-functional manner instead of being divided into residential, cultural, commercial and industrial spaces;

2. Short building blocks should be planned such that they encourage walking through the neighbourhood and interaction amongst people;

3. Neighbourhoods should comprise both older and newer builds (with old buildings being regarded as giving character to the neighbourhood, such that their renovation tends to be in the interests of the neighbourhood);

4. An appropriately dense population, contrary to traditional wisdom, facilitates safety, interaction and creativity among people. Neighbourhoods that are denser give rise to increased levels of "eyes on the street" more than isolating people would.

William H. Whyte (1917-1999), an American urbanist, organisational analyst and journalist, 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

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[3] https://www.thoughtco.com/jane-jacobs-biography-4154171

"Street Life Project," which considered how pedestrians behaved in cities and city dynamics. He suggested that social life in public spaces promotes quality of life among people and the whole of society in a fundamental way. He argued that planners must consider civic engagement and community interaction in designing physical places (Birch, 1986).

Whyte also supported a bottom-up approach to designing for public spaces. Accordingly, he would initially focus on how people use spaces and how they would want the space to be used. He believed that people vote with their feet, so to speak, engaging most extensively in spaces that are comfortable and easy to use. He therefore suggested the non-biased practice of talking to individuals and observing their behaviours as a means of gaining useful knowledge for designing liveable social spaces.[4]

2.5.1   Historic sites and placemaking

The statement of 'Placemaking: The Heart of Heritage Conservation' was released in 2018 by the Global Heritage Fund (GHF), a non-profit organisation that operates internationally. This statement was concerned specifically with the role of heritage in the placemaking process, and its position was that the formation of buildings and public areas was achieved by means of placemaking. It is explained that this process involves the collaboration of a range of different actors (experts, public officeholders, local organisations, citizens, and enterprises) to enhance the social, cultural and environmental conditions within the community, with the optimal means of achieving this being through comprehending in a thorough way the historical importance of the extant site (Global Heritage Fund, 2018). Many of the aspects referred to as compulsory for heritage site placemaking are similar to placemaking processes for any other project, whether historic or not. It is regarded as being especially important for heritage sites to undergo placemaking, as this process presents a distinctive opportunity for heritage locations to harmonise with contemporary development. The statement argues that historic sites have the potential to increase the value of real estate projects and provide the impetus and centrepiece for regeneration programmes

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[4] https://www.pps.org/article/wwhyte

that facilitate the development of new houses and employment opportunities. In this way, the synergy between ancient and modern serves as a key indicator of how heritage can be successfully integrated into modernity.

In considering these goals, it becomes clear that the significance of historic properties and places is based on the profound connections formed between them and members of the community. One of the main foci for the Global Heritage Fund, therefore, is engaging the community in the development process of heritage sites. The origins of such linkages are to be found in these people's cultural significance. This is the main factor that enables a location to become a place, and also explains how places can develop into revered heritage sites.

Historic England (2019) take the view that the fundamental characteristic of great places lies in their heritage. They consider that successful placemakers in modern society have accomplished this by including existing historic sites in contemporary projects via the reflection of past street designs, as well as being faithful to classical materials and elegant architectural characteristics. All these factors are embraced by the most effective places. The historic environment comprises the collective actions that successive generations of people have taken to develop the places in which they reside. This constitutes a valuable legacy that, if properly maintained, can make the area more prosperous, increase wellbeing and enhance bonding within the community (Historic England, 2019)

2.5.2   Urban regeneration and placemaking

Urban regeneration refers to the process of redeveloping and renewing the environment in relation to physical, social, economic and cultural aspects by formulating policies and programmes that focus on urban spaces that have experienced industrial failure and other difficult situations (Fitzpatrick, Hastings & Kintrea, 1995). It focuses on developing the overall quality of urban spaces and includes inclusive processes, strategies, actions and visions for overcoming urban difficulties, and for recognising the processes of failure and revitalising declining economic movement, enhancing social utility and reversing environmental deficiency in a more comprehensive way (Litchfield, 2000; Roberts and Sykes, 2000). Urban regeneration projects are usually handled by different groups from the local

communities, including central government as well private developers (Johnson, Gregory, Pratt and Watts, 2000). In these projects, a range of different measures are involved in an urban space through multiple actions to enhance the space physically, socially and economically, such as developing employment opportunities and addressing disadvantages relating to poverty (Fitzpatrick et al., 1995; Curtis and Cave, 2001). In this regard, "placemaking" is a term used by people and organisations within public community development, as well as by planners seeking to lend authenticity and quality to their projects, some of which, it must be conceded, do not live up to that promise. When the term is used in a project that does not really consider public participation, this weakens its potential value. In this regard, it is important to ensure that the true meaning of the term is respected. Placemaking is not creating a building or designing a commercial space; rather, it involves the participation of people from different social and economic backgrounds with different abilities such that they all play a key role in its identity, construction and preservation, enjoying the result together.[5]

In placemaking, the built elements of urban settings are essential components (Relph, 1976). Lynch (1960) argues that the spaces and elements that relate to the historic built environment play an important role in providing the vast majority of the required characteristics for developing a suitable urban space that results in the development of a place.

One of the most frequent uses of heritage in a utilitarian sense has involved its potential as a catalyst in urban regeneration (Pendlebury, 2017). Using the heritage as an instrument in regeneration has become a worldwide phenomenon, with this usually relating to both policies formulated with a view to improving cultural industries and the more general procedure of placemaking (Porfyriou and Sepe, 2017). There has been a lack of focus in relation to designing the neighbouring spaces of historic buildings in the post-war era, and this has resulted in the development of place-based and heritage-based strategies (Glassberg, 2001).

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[5] https://www.pps.org/article/what-is-placemaking

The historic sites of various cities in Europe have experienced significant degradation, the rate of which process increased during the second half of the last century. In these cities, the local governments have utilised policies for urban regeneration and restoration of these historic sites, especially focusing on damaged historic and heritage urban spaces located nearer to the central districts. Many authors emphasise the importance of the historic built environment in relation to facilitating regional and economic development and the ways in which heritage can improve the economy, both locally and nationally (Mason and Avrami, 2000; Evans and Shaw, 2001; Greffe, 2004; Evans, 2005; Tweed and Sutherland, 2007; Pereira Roders and Van Oers, 2011).

2.5.2.1 Glasgow regeneration plan

In 1983, the McKinsey Report outlined proposals on ways to expand the capacity of Glasgow's city centre after the entrepreneur list model developed in American cities such as Denver, Baltimore and Minneapolis. The main focus was to provide a lively and desirable central space that would be appropriate for both leisure and work (McKinsey and Co., 1983). In order to reach this goal, work began on revitalising the Victorian heritage buildings by cleaning them and installing lighting schemes. A publicity campaign called the "Miles Better" campaign was also funded, the aim being to link growth with external parties, enhancing the satisfaction and confidence of the local community.

Glasgow's urban regeneration is regarded as a successful example of encouraging development through art-related activities. A crucial legacy is the city's older stereotyped image. This proved possible to reframe as a celebration of Glasgow in relation to its status as a commercial destination, the city's design and architecture, its business activity and destination for conferences, and its cultural centre in the widest sense (GGCVTB 2002; Ryan 2002). In reflection of this change, the Greater Glasgow and Clyde Valley Tourism Board data show that, between 1991 and 1998, there was a 25% increase in foreign visitors and an 88% increase in British visitors to Glasgow (GGCVTB, 2002).

2.5.2.2 Hindley Street, Adelaide

Hindley Street in Adelaide, South Australia was historically being regarded as sordid or even dangerous in that it hosted numerous strip clubs, tattoo parlours and bars that were open 24 hours a day. In May 1998, the West End Crime Prevention Report confirmed

that most individuals surveyed held a negative perception of the area, with criminal statistics outlining the kinds of illegal activities carried out there.

In 1999, Adelaide City Council launched its "West End Arts-led Urban Renewal Programme," supported by Arts South Australia and the state government. The council worked with artists and arts associations to create art-related and creative industry programmes and projects within the area, furnishing the West End and Hindley Street with a more varied identity and character. The city council also provided the space with new lighting schemes plans, paving, street furniture and public art renovations. Efforts were also made to improve the evening economy within the area through new lighting scheme plans (Montgomery, 2004). By these placemaking-orientated actions, Hindley street was transformed into a pleasurable space that enjoyed a significantly improved perception among the public.

In considering the different projects that have formed the subject of urban regeneration, what becomes obvious is that, in all the projects, the urban space has been supplemented with new features, whether involving lighting features or (other) artistic elements. These projects demonstrate that even the most unsuccessful or forgotten spaces can become lively points of attention within cities in the event of a successful application of placemaking, with the addition of environmental features being especially useful in the revitalisation of these spaces.

2.5.3   Historic site and urban regeneration

Pendlebury (2014) outlines the process by which heritage representing the modern usage of envisaged pasts is mobilised with a view to achieving a range of contemporary purposes and public policy objectives. A conspicuous and frequently-used mobilisation of heritage that has emerged in recent years is used in the regeneration of urban areas. 'Regeneration' as a concept is commonly perceived as being essentially equivalent to economic development. However, this is a common misconception, leading to the situation in which the accumulation of capital becomes more important than all other factors in the majority of sites. Such a view leads to the failure to consider cases where the motives and inducements for transforming areas via regeneration are different.

The connection between heritage as a form of consumption and regenerating urban areas for the purpose of economic development is potentially appealing and frequently utilised, and is often perceived to be unquestionably synergistic, but it also masks the various objectives of different heritage experts. Heritage lays the foundation for burgeoning cultural activities and assists with forming united and prosperous communities (Historic England, 2019). Porfyriou and Sepe (2017), in their assessment of the economic aspects of regeneration, put forward the view that the influential utilisation of heritage to regenerate sites now occurs worldwide, and is frequently connected with different strategies to create commonly-named cultural industries through placemaking. This, as discussed previously, is a concept often adopted by urban design professionals in the creation of aesthetic physical spaces serving as effective social areas, with such a process often being regarded as identical to 'place branding' (Porfyriou and Sepe, 2017). In this sense, 'branding' is regarded as the process of promoting products and services to trigger and make use of consumer emotions.

Historic sites form the basis of projects aimed at regenerating towns and metropolitan areas. The regeneration of these places can bolster the communal experience, contribute to the local economy and facilitate the development of the broader region (Porfyriou and Sepe 2017). At the same time, they must not be preserved as mere historical objects or antiquities of an earlier period. Such buildings should be used for new purposes and adapted in a sensitive manner for modern practices, particularly when it is no longer possible to use the historical building for the purpose for which it was originally designed.

One example of the economic and social benefits associated with placemaking can be drawn from the project designed to regenerate the historic quay in Gloucester (a cathedral city and district in Gloucestershire, England). This project involved the creation of a multiple-use area purely for pedestrians. Combining 3,500 new employment opportunities and an increase in retail revenue of approximately £25 million annually, the redevelopment of the Quay involved the re-appropriation of historic structures for contemporary use, with the name and identity of the development project being based on the history of the location (Morrison, 2018).

On the strength of cases such as this, it is clear that using historic sites in the regeneration process can give rise to many benefits. Thus, engaging in placemaking in historic sites not only gives rise to financial benefits, but also results in improved protection and preservation as the site becomes a core social and cultural point of interaction.

2.6   Success and failure in placemaking

Leonardo Vazquez is the head of three centres at Rutgers University of Edward J. Bloustein School of Planning and Policy, and has made a mark in urban planning through his work on addressing issues facing Latino communities. Vazquez has been a staunch advocate for social justice and ethnic diversity in the planning industry, arguing that placemaking includes a vast range of approaches and processes developed through the arts to enhance the quality of life experiences by communities. It associations the aims and methods of community development – aiming to improve life quality, cultural development – aiming to develop cultural experiences in environments, economic development – aiming to improve living standards, Assets-based orientation – aiming to improve local asset and finally place based orientation – aiming at developing connections (Rios and Vazquez, 2012).

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 organisations 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 organisation dedicated to helping people create and sustain public spaces to build strong communities, outlines four qualities that the organisation 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:

Figure 2-1: Place Diagram developed by Projects for Public Spaces

2.6.1 Access & linkages

Both visual and physical connections within a space are important features to consider. A successful public space must be easily accessible such that difficulty associated with entering and leaving the place is minimised or eliminated. Paths should be visible both from a distance and up close. The edges that make paths are also important; in comparison to a blank wall or an empty lot, a row of shops along a street engenders greater levels of interest as well as an increased sense of security. High parking turnover and access to public transportation is another relevant factor.

2.6.2   Comfort & image

Places should be comfortable and be perceived positively. Comfort tends to result from feeling safe, with this often stemming from a sense of cleanliness and access to seating.

2.6.3   Uses & activities

Activities constitute the main objective of a place, with the opportunity to engage in such activities giving people the reason to visit the place. An absence of such activities will generally therefore give rise to the space being associated with a sense of emptiness.

2.6.4   Sociability

Sociability is harder to achieve in designing public spaces. This will result in comfort, together with a stronger sense of place and attachment to the community and place.

The qualities depicted in this diagram pertain to a lesser extent to the 'design' of public spaces and the elements within them. For instance, it is specified that a place should be attractive, but there is no specification what elements within the space result in attractiveness. Furthermore, while it is highlighted that spaces benefit from being able to be used during the evening, there is little information on how this can be achieved and what elements (such as lighting) need to be considered in fulfilment of this goal.

This diagram also outlines qualities for general spaces without focusing on any particular type of space. It is therefore unclear whether all of these qualities are applicable in the case of historic sites. Given the fact that every space has its own particular specifications and functions, it is not unreasonable to infer that some qualities, in certain spaces, should be emphasised to a greater extent than others. This diagram provides only limited information regarding what qualities are more important than others in relation to different environments, with equal weight being implicitly afforded to each quality across the board.

This diagram is also insufficient in terms of the information provided regarding different seasons and related factors. Each season has its own particular characteristics. Does the space have to provide the same qualities all throughout the year, or should the design change based on the needs and specifications of different seasons, times and even climates?

The features mentioned in the diagram have a qualitative nature, and so they need to be defined clearly if they are to be realised concretely through design. No such explanation is provided. For example, in the comfort and image category, it is mentioned that the space should be 'charming,' but this is a very subjective quality that is hard to specify in more concrete terms.

As mentioned in relation to the matter of defining a sense of place, cultural aspects play an important role in building the sense of belonging space among the community. Such information is not really covered by the content of the diagram.

2.7 Principles for placemaking projects

PPS (2007) introduces the 11 Principles of Placemaking, which serve as guidelines to support communities. The aim of these is to 1) integrate different ideas into a consistent vision; 2) transform the developed vision to a strategy and programme of uses; and 3) ensure that the application of the plan is sustainable. The eleven principles in full are as follows:

1- The community is the expert: there is a need to have regard to the local people's insights and what they believe is meaningful to the individuals within the place; involving these people will also engender a certain sense of ownership, resulting in a sense of place amongst the users.

This has become an important principle of design, especially in recent years and especially given the trend whereby increasing numbers of designers are focusing on eco-design and the principle that people should become involved in the design of their environments. This is an approach that Innes and Winton (2016) used in the "Twelve Closes Project."

2- Create a place, not a design: there is a requirement to focus on physical elements that engender a sense of being welcome and comfortable such that there is an overarching sense of place; this can be achieved by developing more effective relationships between the design of the setting and the activities engaged in the public space.

In order to create a place, the elements within the setting should be in harmony with the overall design and the concept of the place. It follows from this that, if the elements under consideration are not in line with the whole concept, then they should not be used. This is especially true in terms of lighting; they must not only light the space but also mesh with the overall concept of the place to facilitate the process of placemaking.

3- Look for partners: partners can help in relation to project-initial brainstorming or with providing support and getting a project started.

This principle relates to the implementation and support provided to the project rather than the design process. It is often the case that the supporters and sponsors of the project aim to make comments relating to the design process, and they may even prevent the project if it is not regarded as being in line with their own ideas, many of which are not professionally viable. Accordingly, the role of the sponsors and supporters must be defined at the beginning of the project.

4- You can see a lot just by observing: considering how people are using or not using public spaces and studying their likes and dislikes can serve as a guide on what kinds of activities are missing and what might be incorporated; this should continue after the project is completed, yielding further information regarding how to manage the place over time.

5- Have a vision: the vision must come from each individual community; the vision should give an idea of the type of activities that can take place, provide comfort and be attractive to people.

6- Start with the petunias: lighter, quicker and cheaper: developing successful public spaces is a difficult process; it is therefore suggested that designers begin with short term developments that can be tested and refined over many years, with examples of shorter-term improvements including providing seating, public art, outdoor cafes, developing crosswalks, pedestrian accessibility and community gardens.

7- Triangulate: "triangulation is the process by which some external stimulus provides a linkage between people and prompts strangers to talk to other strangers as if they knew each other" (Whyte, 1980); in a public space, the

placement of various elements in relation to each other can result in triangulation; for instance, when a bench, a wastebasket and a coffee cart are placed near each other, they will naturally bring people together.

8- They always say "it can't be done": Berra (2010) states that "if they say it can't be done, it doesn't always work out that way"; making efficient public spaces is undoubtedly about managing problems encountered; starting with small-scale community-nurturing improvements can validate the position of 'places' and help to overcome problems.

9- Form supports function: input from the community and potential partners, studying other spaces' functions, experimenting and problem solving can all provide designers with the 'form' required to accomplish the future vision set out for the space.

10- Money is not the issue: after installing the basic infrastructure of the public spaces, the elements that are added that will make it work (e.g. cafes, flowers and seating) cannot be regarded as costly; furthermore, if people build connections with the place across different levels, costs can also be reduced through the involvement of the community and other partners.

11- You are never finished: positive public spaces that respond to the needs of the community require maintenance.

These principles pertain to placemaking projects in a general sense. Although valuable to consider, there is a need within the present research for principles that focus particularly on how design can facilitate placemaking.

2.8   Summary and Conclusion

This chapter explored the available literature in relation to the concept of place and placemaking to reach an understanding in regard to this independent variable. Key to the research is the concept of placemaking, which is described through the reviewed literature as the process of planning, designing, managing, programming and developing shared-use spaces. It was established that places include but are not limited to the *physical features* of a setting, as well as the *meanings* and *messages* that people receive and interpret on the basis of their own experiences, inspirations and expectations.

The reviewed literature also made it evident that characteristics such as materials, colours and shapes, scale, harmony, order and picturesqueness are all important physical features within a setting that can facilitate the process of giving meaning to a space such that it is transformed into a place. For Relph (1976), places fall to be classified in terms of three different components, which are the physical setting, the activities that take place within the setting and the meanings the setting carries. Thus, for this research, it is important to consider how light facilitates and works within the physical setting, how it facilitates certain activities taking place within the setting, and what meanings it adds or emphasises within the setting. There is also a need to consider whether lighting can facilitate the building of the six natures of connection with a place, with these being biographical, spiritual, ideological, narrative, commodified and dependent (Cross, 2001). Given the concerns of the present research in relation to the use of lighting, there is also a need to consider, as Steele (1984) outlines, the relationship among individuals and settings in terms of transactions. The same is true of the claim that the concept of place is psychological and interactional as well as physical, with environments with a strong 'spirit of place' resulting in more or less similar impressions being experienced across large numbers of people.

Placelessness was another useful concept that was studied in this chapter. This was especially important to understand how to prevent such concept in the design of urban spaces, in this research with the use of lighting. Accordingly, it was found that considering solely the issues of mass communicative effectiveness, cultural concepts and central authority runs the risk of giving rise to placelessness. In this regard, the concept of placelessness stems from effectiveness being the sole or at least the major concern of the project in question (Relph 1976). It is therefore important to also consider lighting designs that are specific to the site and the culture of the people within the space. As Buttimer and Seamon (2015) make clear, people with different experiences, inspirations, and backgrounds are found to experience places in diverse ways, with the cultural and social backgrounds of such people providing a lens through which places are understood. Given the findings of the literature, it can be concluded that if the social and cultural backgrounds of the people within a site are not borne in mind, there is the potential for placelessness to result.

Another important concept considered within the literature is that of the 'sense of place', referring primarily to the bond between people and places, their attachment to places and the meaning of places. This constitutes an overarching impression pertaining to the basic ways that people feel about places, and the ways in which they sense these and allocate perceptions and values to them (Najafi and Shariff, 2011). As Steele (1981) describes, the sense of place is the particular experience of a person within a particular setting concerning the question of whether the setting can make the person feel stimulated, excited, joyous and so forth. Appropriate lighting that can enhance such feelings can facilitate a sense of place. In this regard, the sense of place relates to the psychological and physical experience associated with a place. What can be concluded, therefore, is that, in order to stimulate a sense of place through lighting, the design must consider how the lighting influences people's psychological and social experience, as well as how it affects the physical setting. According to Shamai (2005) and Shamai and Ilatoy (2005), the higher level of belonging, attachment and commitment a place has for people, the more sense of place they experience within the setting. Thus, through lighting, that offers little or no sense of place can be transformed into a place that people identify and can be properly involved with.

This chapter has investigated relevant secondary research and identified useful concepts and professional principles through which the subject can be better understood. Principles introduced by the Project for Public Spaces are particularly beneficial to consider in designing lighting. Many of these, such as "the community is the expert, look for partners, you can see a lot just by observing and you are never finished" point to the role of engaging different groups of people within the design process, with such individuals including the consumers, local people and experts within the field. Other relevant principles relate to aspects of management, while yet further principles relate to design considerations, such as the matter of how to engage in design through "creat[ing] a place, not a design." these aspects are used in designing the questions for the primary data and the interpretation and discussion of the findings.

Findings, from Projects for Public Spaces and Kurniawati (2012), suggest that lighting should ease accessibility within the space for different groups of users. It should be

responsive to people's different activities and social engagement. It is also important that the lighting make the space more comfortable for visitors, promoting a positive image of the place among users. The desires and interests of individuals must also be considered within the lighting design, and the lighting should make the space more meaningful for its users. Furthermore, drawing on Rapson's (2013) four parameters for creative placemaking, the lighting must be grounded in the particulars of the place and should be authentic. In addition, the local community should be engaged in the design process such that the design can support that community. Finally, it should engage the capacity of arts and cultural organisations to adopt an outward orientation.

The work of Jacobs emphasised the importance of bringing old sites back to life through renovation and design. Lighting, as a design tool, can be used to great effect in old and historical sites, renovating them and turning them into specific places for people within cities. As discussed above, urban regeneration is a concept involving the process of redeveloping and renewing the environment in relation to physical, social, economic and cultural matters by formulating policies and programmes focusing on urban spaces that have experienced industrial failure and other periods of difficulty. Urban regeneration projects involve a range of different measures in an urban space through various actions taken to enhance the space physically, socially and economically, such as developing employment opportunities and addressing poverty (Fitzpatrick et al., 1995; Curtis and Cave, 2001). Through considering the work of Whyte, it became apparent that there is a need to both consult the views of people and observe them within the space.

Chapter Three: Urban Spaces and Lighting

3.1   Introduction

Lighting has the power to literally illuminate and enhance users' experience within the built environment, and research into the effects of urban lighting on behaviour, environmental psychology and social interaction is developing at a rapid rate. Yet, despite the affect it has on individuals' daily lives, the practical application of this topic remains understudied. This chapter outlines how lighting is used in urban spaces and details its importance within the built environment in relation to the project of placemaking. Initially, based on Chapter Two which found the importance of social aspects in placemaking, as well as the effects of placemaking on socialisation, it reviews the literature on lighting in urban spaces focusing on social aspects which is known as one of the main aspects that lighting can influence. Then, it moves onto studying the literature on lighting in urban spaces and for people, and the different ways of engagements and movements of light. All these aspects are aimed to provide a clear understanding of what light can offer and how it should be used in urban spaces. This chapter also presents the negative aspects of using lighting in urban spaces at night-time, with these requiring to be considered as an important environmental matter within the context of this research. In the final section, quality of light and how lighting has come to be regarded an important factor in urban design is studied, with this providing an understanding of the processes lighting has gone through and the factors that have affected how light has been used.

3.2   Sociability and lighting in urban spaces

Navaz Davoudian is Honorary Senior Research Associate at the University of College London Institute for Environmental Design and Engineering. Her research interests are concerned with Urban Lighting and Night Cities, and her book *Urban Lighting for People Evidence-Based Lighting Design for the Built Environment* provides an evidence-based approach to light as part of everyday life. Davoudian (2019) points out that light constitutes a ubiquitous element of individuals' social lives. With all of the activities people engage in happening in the presence of some degree of light (whether daylight or artificial light), light informs the social behaviours of people in different ways within social spaces. Urban lighting therefore constitutes an essential infrastructural component of people's social interactions and day-to-day activities. Such social

significance of lighting is emphasised across a variety of subjects: lighting leads to the incurrence of vast ecological and economic costs; light is also deeply intertwined with various issues relating to health and safety, as well as issues of wellbeing, with a particularly relevant example from the urban context being light pollution; finally, light is used to organise both social activities and people's lifestyles more generally. Davoudian argues that lighting designers can influence urban life and built environments in important ways that complement the work of planners and architects. Lighting designers therefore need to be aware of what is involved in identifying the social aspects of light, and how to factor these into their lighting schemes (Davoudian, 2019). Considering the social aspects involved in urban spaces is therefore crucial for lighting designers.

An important handbook relating urban lighting to public spaces and sociability is that by Geissmar-Brandi and Ulrike Brandi (2007), *Light for Cities: Lighting Design for Urban Spaces*. This book sets out standards for the subject and serves as a practical guide. Based on the authors' knowledge and work experience within the field, it focuses on the technical and planning characteristics of the development of lighting schemes for public spaces and offers valuable evidence on feasibility and potential financing patterns. The book features high-quality coloured images, detailed drawings and plans for implementation, and is systematically organized (Žák and Vodráčková 2016).

Geissmar-Brandi, one of the authors, studied art history, literature and psychology at Hamburg University, where he undertook a comparative study of the phenomenology of the shadow. He has also written several architecture and lighting design books as a non-fiction author. Ulrike Brandi, the other author, is an international lighting designer. She studied Industrial Design under Dieter Rams at the Academy of Fine Arts in Hamburg and founded the Ulrike Brandi Licht GmbH, where she has since worked as managing director. She has worked on over 800 international lighting projects. She also runs lighting design workshops and has published several guidebooks on lighting (Brandi, 2001).

Brandi and Geissmar (2007) argue that the meaning of light in our cities has changed. Due to work commitments, it is often the case that people cannot take part in social activities in urban spaces during the day. Urban spaces are therefore regularly used

during evenings for various cultural, social, and sports- and entertainment-related activities, with the use of lighting being essential to such functions. Furthermore, the urban environment is diverse in its spatial categories and experiences and so too is the range of lighting design that facilitates the access, meaning and functionality associated with this environment. This environment includes, but is not limited to, city streets, public spaces, parks, building and historical spaces.

In Brandi and Geissmar's view, a 'holistic attitude' to urban lighting can generate exciting, wealthy, safe, and inclusive spaces for those who work, live and engage in leisure within cities. Holistic responses are those developed that consider both aesthetic and functional aspects together. For Brandi and Geissmar, holistic attitudes reflect the concept of the "lighting masterplan," which they regard as encouraging people to engage with what the city has to offer (Brandi and Geissmar, 2007).

3.3   Lighting as social access

From a sociological viewpoint, 'social' matters are those relating to the practices, values, connections and institutions that structure collective life. They therefore pertain to the ways that people organise themselves in various places to engage in a way of life (Davoudian, 2019). They also refer to the manner in which individuals arrange their lives across different locations so as to lead their lives, and imply the highly distinct forms assumed by things within specific locations, with these being frequently regarded as 'cultural differences' (Weick, 1977). In this regard, there is a relation with the specific forms taken by objects and materials in particular places and social worlds, with every space that is used by people being a social one. This understanding leads to the inclusion of public lighting within the relationship of the many different understandings, actors and interactions that make up a specific public space (Davoudian, 2019).

In order to understand how design relates to the social, there is a need to consider these three factors. As well as people's relationships with each other, the social includes people's relationships with technologies and with objects and materials. Spaces for social gatherings, such as streets and offices, involve in an obvious sense integrated interactions between objects, technologies, social practices and people. So, in relation to lighting design, it is essential to understand that lighting is not a matter of

illuminating a space to facilitate people's social needs; rather, through lighting, the social is made in much the same way as it responds to it.

Furthermore, 'the social' differs from 'the psychological' or 'the economic.' Within the two latter fields, individuals constitute the main concern, and each person's separate decision is considered as contributing to the cumulative group behaviour. In social research, on the other hand, individuals are regarded as being part of a family, community or a city, and so their decisions can be studied as a whole.

There are also complex and unanswered issues to grapple with in relation to how social knowledge and lighting design interact. One of the main questions arising pertains to the type or form of social knowledge that is maximally useful for lighting design.

3.3.1 What is 'the social' in lighting design?

We can understand 'the social' by studying the work of two writers in the field of architecture and urban planners who have also strongly influenced lighting designers: Kevin Lynch and Jan Gehl. While the majority of their work relates to the 1950s, they have both focused on the 'social' aspects of public spaces, using sociological methods for studying the built environment. Their work has therefore served as a reference for researchers across different disciplines.

Jan Gehl is an urban design and architecture consultant based in Copenhagen whose work focuses on enhancing urban life quality by re-positioning the design of the cities such that they are more pedestrian- and cyclist-friendly. His book presents the critical features that relate to people's needs for enjoyment as they relate to spaces in the public realm. These features remain ubiquitous in a manner that renders them almost impervious to the trends whereby architectural styles go in and out of fashion and the character of the 'life between buildings' changes. His influential book was first published in 1971 in Danish, with the first English translation not coming out until 1987. Gehl supports a practical and simple attitude to developing urban form, systematically documenting urban spaces, making steady incremental enhancements, and then documenting them again. Gehl's examination of the built world speaks directly to the sociologist. In describing the 'life between buildings,' the importance of

the built environment for facilitating social interaction is made apparent: well-designed built environments enable social interaction; poor design hinders it.

In his influential book, Gehl (2011) argues that, to promote social activities amongst people, there is a need to consider the physical futures of places. He considers lighting for public spaces as a physical element, and argues that possibilities for visualising also pose questions regarding the need for adequate light to be shed on the objects to be seen. To the extent that public spaces are to function during periods of darkness, lighting is crucial. The lighting of socially relevant subjects - primarily people and faces - is particularly important. Out of consideration for both the general senses of enjoyment and security and the possibilities for experiencing people and events, it is desirable that lighting of pedestrian areas be ample and well directed at all times.

Gehl believes that the built environment can shape social life and facilitate increased communication, this being the primary objective of 'the social' (Gehl, 2011). Gehl invites researchers to work on the interdisciplinary project of 'public life studies' to understand how different and complicated public life is given the shifting historical features and the social scopes that form public space. In this regard, it is possible to break down such phenomena into the design of the space and its elements, the gender and age of users, financial resources, culture and many other aspects relevant for how a public space is to be used. In *Life between Buildings*, Gehl does not study or consider night-time activities in planning for public spaces, but what takes place at night stands to be influenced by the design of the public spaces, and one of the important and effective factors is the lighting of public spaces.

In *The Image of the City*, Kevin Lynch considers similar matters. He outlines a cutting-edge methodology for selecting people's personal and collective images of the city, with this involving inviting them to draw maps of their remembered urban practices, focusing on paths and routes (Lynch, 1984). Accordingly, unlike Gehl, who relies primarily on behavioural observation methods, Lynch approaches people's own understandings and descriptions of their practices.

Lynch's method utilises the practice of observing people, interviewing them and engaging in mapping, focusing on wayfinding in cities through gaining a picture of the environment. This serves as a general mental image of the exterior physical world,

serving a social role and cultivating emotional security among users. Based on his findings, Lynch outlines his language of 'nodes,' 'networks,' 'viewpoints,' 'pathways', 'edges' and 'borders,' these making up the foundation of the planning methodology he sets out to make memorable, legible and passable cities (Lynch, 1984).

Notably, Lynch also eschews consideration of the night-time environment of cities in a manner similar to Gehl, although legibility is an even more serious issue after dark given the difficulties that would arise if the infrastructure of city's lighting were not to be considered.

For making a space socially active at night-time, light should be used to boost the meaningful legibility of spaces and provide an appropriate setting for social interaction and encounters. Such practices will not only result in a clear focus for lighting, but also meet the requirement regarding the recognition of people's different maps and movements (Davoudian, 2019).

3.4   Lighting in urban spaces

For Sandoval (2000), cities are in a state of constant change, not only in terms of the built environment, but also with respect to changes in social and cultural values. Edwards and Torcellini (2002) outline how daylight can increase the general wellbeing of citizens. They also outline how open spaces in cities can provide a place for social interaction amongst people. According to Sandoval (2000), most 'great cities' are exclusively attractive on a sunny day when natural light affords certain aesthetic pleasures. Daylight can show the natural features of buildings' facades and monuments in urban environments. Artificial light, by comparison, is less useful in this regard (Preetham et al., 1999). However, there is a difference between daytime and night-time in terms of the extent to which citizens engage with each other and the city. Sandoval (2000) raises the concept of night-time lighting for urban spaces, which is vital for the practice of engaging with spaces at night. Sandoval outlines how, from the traffic flow of streets and the green spaces of parks, to the atmosphere of Old Towns and the modes of lighting design, all play a part in the qualitative experience of urban life.

Lighting urban spaces for night-time has become a vital infrastructural component in developed countries around the world, having a wide scope and constituting a famous

category within the area of lighting design. Davoudian (2019) outlines some of the lighting design aspects within urban lighting that have received increased levels of attention, such as urban lighting for drivers, lighting for visual performance, lighting as it relates to people's quality of life in terms of easing travel in neighbourhoods, architectural building lighting, urban monuments, and the aesthetic aspects of lighting within urban spaces. However, there is little exploration within the literature as to how lighting can actually play a part in heritage sites and placemaking in urban design.

Lighting has the potential to facilitate different experiences within public spaces. Pauley (2004) takes the view that artificial brightness is important in that it gives new perceptions of urban spaces at night that are noticeably different from those of the daytime. Differing experiences of public space at night as compared to those in the daytime have formed the basis of several lighting schemes around the world (Wadhwa and Robert, 1998; Taghvaei et al., 2011; Ebbensgaard, 2015; Rankel, 2014). For instance, the Grand Mosque of Abu Dhabi is a project marked by blue light at night; during the day, the main colour of the mosque is white, and visitors experience the mosque differently at night as a result of the dramatic change in the colour scheme.

3.5   Lighting for people

There are a number of design guidelines and codes that include measurable indices to describe the quality of luminous environments and street lighting (Uchida and Taguchi, 2005; Ekrias et al., 2008; Johansson et al., 2014; Boyce, 2014). However, the impact of urban lighting on human psychology and the basic mechanics of visual perception are not addressed adequately. Narboni (2004) argues that urban lighting extends beyond energy-related statistics and quantitative lighting performances: lighting firstly focuses on people's experience and the perception of the urban public space, and should therefore reflect the practice of beautifying spaces, the sense of safety, the setup of social involvement and the vitality of residents. Innes and Winton (2017) believe both that people should form the initial focus in lighting design and that people should be engaged in the process of design in developing lighting schemes for public spaces. In their project "The Twelve Closes" (Innes and Winton, 2017), they engage the residents of a neighbourhood in producing a lighting design scheme for the twelve closes of the neighbourhood.

In their research on lighting as it applies to women and elderly and disabled people, Johansson et al. (2011) explore the matter of how sustainable cities can provide a positive living environment that allows people to participate in urban life on equal terms. However, during the hours of darkness, the mobility of many groups - including young women and elderly and disabled people - is restricted such that they are often limited in terms of where they can go, which may have negative consequences for their health and psychological wellbeing. Thus, the presence of lighting may contribute to enabling people to feel more confident in going outside after dark, increasing the accessibility to and safety of the environment. There is a continuing interaction between people and their physical environment, where properties of the environment, such as lighting, may impede or support certain behaviours. This interaction is mediated by characteristics of the individual person, such as his or her perceptions, attitudes and personality. The same environment may therefore affect people differently. This implies that environmental design should be evaluated not only in terms of objective criteria, but also according to different individuals' perceptions.

3.6   Engagement with light

In *Light for Public Space*, published by the Philips lighting Company (Philips has been renamed as "Signify", Signify is a Dutch multinational lighting corporation formed in 2016 because of the spin-off of the lighting division of Philips. The company manufactures electric lights and light fixtures for consumers, professionals and the IoT. In 2018, Philips Lighting changed its name to Signify, though the company still produce the lights under the Philips brand.), contemporary lighting technologies are introduced as one of the major opportunities to engage citizens in new ways. When people engage within their environments, they are more likely to experience a sense of place (Canter, 1979). Steele (1981) also outlines how people should feel connected and engaged within their environments so as to feel secure and welcome, facilitating attachment and a sense of place. As discussed in the previous chapter, placemaking requires the built elements within the urban setting to engage different groups of people within the environment as essential components (Relph, 1976). In this regard, the spaces and elements that relate to the historic built environment play an important role in providing the vast majority of the required characteristics for developing a suitable urban space such that placemaking can be achieved (Lynch,

1960). Accordingly, lighting, as one of the important elements within the urban space, can play a central role in engaging people within the environment, which is a crucial aspect of placemaking. Therefore, drawing on Philip company's, four different levels of engagement with light in public spaces are introduced below as follows:

1- Ambient light: ambient light or general light is typically seen as the starting point for a space that makes up the 'base' level of light in a space; it ensures visibility through basic illumination.

2- Dynamic light: dynamic light combines illumination with miniaturised computing that controls the light output; light effects are pre-programmed and do not make use of sensor equipment, but instead rely on predefined patterns and rules to change their function over time.

3- Responsive light: a powerful piece of abstract art that is highly situated and specific to its location; responsive light uses sensor input to affect light output over time; frequently, this is used to create site-specific installations and effects; whereas dynamic lighting follows pre-programmed sequences, responsive lighting installations link site specific inputs to rule-based outputs in the form of colour, movement and timing.

4- Interactive light: interactive light relies on direct input from users who are equipped with controls to consciously affect light output; a variety of interfaces can be used to enable citizens to modulate their urban environment in this way.

In relation to this research, some of these lighting features can be used in heritage sites in various ways; others, in contrast, are less suitable. Ambient lights are commonly used in historic sites to illuminate the whole space without any remarkable emotional or aesthetic purposes underpinning this practice. This type of lighting still uses older light technology, such as metal halide light and sodium low pressure lights, which consume more energy in comparison to newer technologies, such as LEDs.

Dynamic lights are often used for indoor spaces; historic site lighting tends to cover the exterior spaces of the site. One important matter relating to lighting historical sites is the emotional influence of the lighting on the space. This particular form of light is unsuitable in this regard, being pre-programmed on the basis of algorithms.

Responsive light is also not used in historic sites, as this form of light is usually deployed in more functional contexts, such as in street lighting or traffic control, often turning on as a response to the need of an individual user.

Interactive light is another form of light that constitutes a subpart of interactive design. As interactive design is a user-oriented field of study that is concerned with meaningful communication of media through cyclical and collaborative processes between people and technology, this lighting type follows the same approach. As the name suggests, these lights can be used to encourage people to interact with the site and its specific elements. Apart from the technological aspect of the lighting, interactive light can be combined with a narrative in order to present the history of a site. Currently, several historic sites make use of this technique, with examples including the Saint-Avit-Sénieur site in France, the historic centre of Avila in Spain, and Capitoline Hill in Rome.

An ever-growing number of projects are facilitating public engagement by inviting citizens to consciously affect lighting output. Such interactive lighting requires direct input from users and equips them with the means of controlling the lighting via sensors, mobile devices or other interfaces. Unlike responsive lighting, interactive equipment relies on users' inputting information, allowing them to shape their urban environment.

3.7   Six Movements

In Seitinger and Weiss' (2015) *Light for Public Space*, an explanation is put forward as to the role of light and its distribution in space relative to its users, their behaviour and their preferences. They define six major areas of change of ideas for LED-lighting in public spaces. First, they explain that, for most of the 20th century, lighting was used for roadway lights, with the focus gradually coming to be on people. Second, they explain that lighting has moved from being uniform to featuring within carefully curated lightscapes. Within the book, lighting expert Wout Van Bommel emphasises that urban areas with higher levels of non-motorised traffic require an entirely different approach to lighting, specifically, one that draws on contrast to "make a space more interesting" to its users. Being of a similar view, Nancy Clanton (Nancy E. Clanton is founder and President of Clanton & Associates, a lighting design firm

specializing in sustainable design. Nancy speaks throughout the nation on topics relating to sustainable design, energy efficiency, and light pollution, and has been an instructor at the University of Colorado at Boulder) conducted experiments to challenge the practice of 'spraying' uniform light within urban environments. These studies demonstrated that lower levels of light can provide greater contrast, and that this contrast can actually improve observers' abilities regarding detection and visibility. Third, they point to the controlled use of contrast in lighting, with such a practice often being used to replace fully bright spaces. The previous approach of "brighter is better" often results in over-lighting of specific spaces through overlapping infrastructures. These conditions also have the potential to contribute to more extreme contrast. A recent survey, conducted in the city of Derby by the LSE's Configuring Light group in collaboration with lighting designers Speirs + Major, came to an insightful and relevant conclusion: the extremely bright illumination of the city's high street caused citizens to perceive the adjacent more residential areas as unsafe as a matter of the extreme contrast, with citizens' subjective perception of safety depending to a significant extent on the nature of the transitions from one lighting zone to another. Fourth, the authors consider the change from overhead lighting to enveloping light. Contemporary designs show how even street lighting poles can be rethought with the help of new technology. Fifth, the authors consider the change from a one-size-fits-all approach to a celebration of diversity: the era of digital lighting promises to deliver a more differentiated user-centric experience than public lighting of the past. Lighting designers today are able to tailor effects to specific user groups and their individual needs and preferences. Finally, they consider the development of the resilient city out of the previously brittle city, with the shift to digital lighting allowing for the creation of more resilient urban environments that are able to adjust and evolve over time.

These six movements serve as an important source for highlighting the important function of LEDs within the modern history of light. However, there is little consideration of the fact that the same technology has resulted in increases in energy-consumption, nor is there any commentary on the increased difficulties associated with the recycling of LEDs, which has given rise to environmental issues on a global scale.

3.8   The darker side of urban lighting

Although there are a range of studies in urban lighting outlining the benefits of urban lighting (Bessette, 2011; Raynham, 2007; Brandi and Geissmar, 2007; Narboni, 2004; Hargroves, 2001; Peters, 1992), there are also studies taking a more critical view of this topic (Frank, 1988; Hill, 1990; Haus and Smolensky, 2006; Falchi et al., 2011).

Lockwood et al. (1990) consider the subject of light pollution. Light pollution, leading to the glow associated with excessive or inappropriately-installed outdoor lighting, is common in urban areas. The effect of light pollution on the brightness of the night sky was first explored by Merle Walker in 1966 in relation to a site survey in California, her aim being to select the location of the Lick Observatory telescope (Walker, 1973). Hölker et al. (2010) find that light pollution associated with urban areas reduces the amplitude and magnitude of zooplankton vertical migration. O'Farrell and Heritage (2007) define light pollution in terms of the sky being brightened during night-time hours as a result of dust and aerosol particles of water in the atmosphere, dispersing artificial light. Most of the research on light pollution considers the effect of light on the night sky. However, in *Urban Lighting, Light Pollution and Society*, Meier et al. (2014) consider humans a secondary factor in relation to this problem. They conclude that light pollution pertains not only to the visibility of the star-filled night sky, but also to the associated detrimental impact on communities, and on people's wellbeing and the aesthetic qualities of towns and landscapes. Light pollution results from excessive lighting installed in, for example, shop advertisements and to illuminate displays, in addition to substandard outdoor lighting designs. As a result of the phenomenon of light pollution, observers are unable to gain maximum benefit from viewing the sky at night.

It is also reported that the effects of lighting on humans include increases in the danger of breast cancer, sleep disorders and, potentially, metabolic disorders, including obesity and diabetes (Stevens, 2001; Davis et al., 2001; Kusmanoff et al., 2016). Gaston et al. (2012) further outline the ecological consequences of night-time light, stating that, because of the huge volumes of energy used for artificial lighting, the problem of CO_2 emissions is also a serious matter.

Dangerous effects of urban lighting on animals consist of interference with reproduction, migration and orientation, and predator-related interactions (Kusmanoff et al., 2016). This negatively affects both specific species and ecosystems more generally. Ecosystems include a multifaceted stability of connections among different species, and so interfering with such systems can give rise to a series of destructive effects.

3.9   Placemaking and Quality of life

Serag El et al. (2013) argue that traditional urban development, particularly that taking place after World War II, has posed many issues that affect humans' quality of life in negative ways. They point to problems such as high levels of travel, inadequate service levels, air quality deficiencies, a degraded sense of place, land-use separations and other non-urban features. Lotfi (2009) describes how the concept of quality of life is regarded in different ways across different fields such as healthcare, education, politics, the built environment, recreation and urban design, and social belonging. The will to increase the quality of life in a specific place or for a specific individual or a group of individuals is one of the important aims of planners. Myers (1988), however, regards quality of life as political concept that is regularly used to define the satisfaction of citizens with different residential settings. Some of the features that influence the quality of life in a positive or negative manner are levels of crime, levels of traffic, job opportunities and green spaces. This concept therefore pertains to similar concepts as planning, and to general welfare as it manifests in the public wellbeing. McCormick (2018) argues that urban living has been associated with a better quality of life such that improved access to social, economic and cultural resources is now a fundamental component of this.

Montgomery (1998) points to twelve physical conditions in planning a city that are regarded as increasing vitality and positively impacting quality of life among citizens. His eighth condition, pertaining to the public realm, is concerned with the position of public spaces in urban design. He states that, in a city, the public realm achieves many functions, such as offering meeting places, defining the built environment, providing spaces for local traditions and customs, and offering identity and meaning. He places particular emphasis on lighting for public places through the promotion of natural and

organised surveillance, and controlling the level of maintenance appropriately through the installation of high quality lighting features (Montgomery, 1998).

In addition, recent city developments are regarded as requiring to include a large range of programme of public art and landmarking in the city's open space, water, traffic and pedestrian systems, so designed as to increase the overall city's legibility and to offer specific features and points of interest. This also includes street furniture design and lighting features that allow for the cultivation of public spaces. Gokhale (2010) takes the view that, to improve the quality of life in cities, urban planners, architects and designers take a range of visual and functional aspects into account. Suitable lighting schemes are one of the aspects that can provide significant benefits by enhancing the aesthetic value and perception of the urban spaces. In *Cities Alive: Rethinking the Shades of Night* (2015), published by ARUP company (ARUP being a multinational professional services firm headquartered in London that provides engineering, design, planning, project management and consulting services for all aspects of the built environment), it is mentioned that urban lighting should be rethought, and has the potential to serve as more than a functional means of furthering goals relating to safety and beautification.

3.9.1   **Psychological aspects of lighting in placemaking**

Johansson et al. (2014) believe that the quality of urban lighting is an important factor for contemporary urban spaces at night-time. Veitch and Newsham (1998) outline a definition for lighting quality, referring to the conditions of lighting that have a desirable impact on people's behaviour, health and ability to engage in tasks. Cuttle (2008) puts forward that lighting quality can assist with discriminating between colours, texture, details, form and surfaces such that the observer experiences minimal discomfort.

As Houser (2012) outlines, lighting quality can refer to different matters in relation to different projects and people. He relates lighting quality to the mood, atmosphere, aesthetics, visual comfort and social relationships within the public spaces, such that a city with high-quality lighting will be constructed with due regard being had to these matters. He also argues that these matters cannot be measured by means of reference to the density of lighting power or luminous efficacy (Houser, 2012). Similarly, Lo and

Steemers (2014) argue that measuring the quality of light is a multifaceted topic, with lighting perception systems often being influenced by different human-related issues. Therefore, to evaluate and characterise lighting quality, understanding the connection between seeing and perceiving is crucial.

The 1970s witnessed a significant level of research by John Flynn, who had an interest in the quality of lighting and combined psychological techniques and multivariate statistics within the context of his research. That said, there was also a level of criticism levelled at his research (Veitch, 2001). The work by Danford et al. (1979) constitutes a notable example, alleging that his work only focuses on narrow aspects of lighting to the exclusion of other important matters, such as satisfaction and perceived wellbeing, possibly as a result of the fact that such matters are difficult to quantify. These criticisms aside, Flynn's work served to advance the state of the art. Flynn (1973) believed that the modulation of lighting, together with the utilisation of a strategic layout, could influence people's moods. For instance, in an environment such as a church, there is the potential to cultivate a calm and restful ambience among the perceivers. Similarly, on the performance stage, lighting can add mystery or even direct the audience's attention to a specific attribution within a context. Flynn (1977a, 1977b) studied the visual appearance of luminous conditions in the physical environments and the assessments conducted in relation to such conditions. With the use of the Semantic Differential Scale, he assessed people's reactions to various conditions cultivated through different styles of lighting. This scale was divided into three factors, comprising evaluative impressions, explaining the user's preference, and spaciousness and perceptual clearness, with this pertaining to how the environment is perceived visually. Assessment tools used included those designed to measure human experiences and subjective emotions of the influence of light, as well as the psychological processes associated with these factors.

In a succession of complex investigations, Baron et al. (1992) tested the theory that cognitive task performance and social behaviours are influenced by lighting circumstances that give rise to certain positive affects. Their account outlines that the most perfect circumstance makes use of warm-white fluorescent lamps at 150 lx (against a variability of other light sources, all at either 150 or 1500 lx). However, it is

unclear from these results whether the lighting circumstances (comprising illuminance and lamp spectral power distribution) produce a positive effect, but the main idea of the results resulting from the three tests are reliable given the fact that other studies have corroborated this account. Their account outlines that additional study is required to establish that positive effects facilitate lighting-behaviour associations, and to classify the luminous circumstances that give rise to positive effects (Baron et al., 1992). Because of the relation between human visual system and light, some opticians and medicine researchers have also conducted certain studies on this subject.

Hollands and Sprengers (1994), whose account consider lighting in urban areas, conclude that urban lighting is commonly linked with three important human activities, these being transportation, commercialisation and recreational activities. They state that the first public spaces for which public lighting was specifically designed were streets, with the main aim of street lighting being ensuring sufficient levels of illumination for hindrance recognition and the ability to recognise one's location in the case of drivers and citizens more generally. However, lighting schemes in urban spaces have been developed in pursuit of other objectives as well, with examples including billboards for commercial purposes as well as entertainment-related activities (Hollands and Sprengers, 1994).

3.9.1.1 Environmental psychology and placemaking

To study the psychological aspects of light in the urban context, it is necessary to understand the connection between light and the environment. When speaking about lighting in urban spaces, the role of the environment should be highlighted, for the identity of light is linked with urban spaces. In addition, as Mehrabian and Russell (1974) note, each environment has a specific impact on human feelings: in terms of the psychological point of view, all environments carry a meaning that can impress the users' emotions individually and without the presence of artificial lighting. If light is added to the environment, the impact of space on the user is different and can become more complex. Therefore, the study of psychological aspects of the environment in relation to the perceiver in the urban context is crucial.

By the end of the 1950s, environmental psychologists had sought to delineate their objects of study within the psychological sciences. During this decade and the

following one, environmental psychologists focused their attention on the physical factors of the environment in which human activity takes place. Their aim was to recognise the connections between human behaviour and everyday physical or socio-physical spaces (Bonnes and Carrus, 2004).

In the 1970s, environmental psychology advanced further and came to consider other variables serving to inform the field's view of the importance of light. Several new methods came to be used by environmental psychologists to test user-environmental compatibility, such as the semantic differential scale, multidimensional scaling etc. (Kasmar 1970; Mehrabian and Russell, 1974).

The semantic environment description (SMD) scale was designed by Kuller (1991) to measure the visual quality of the built environment. This scale comprises eight different factors, which are the characteristics that the observer perceives from the environment. These are potency, social status, pleasantness, enclosedness, affection, complexity, unity and originality. They do not describe the affective state of the observer. A model was developed by Belcher and Kluczny (1987) in relation to the question of how the visual environments influence the visual performance, as well as how mood and decision-making strategies compete for human mental processing capacity. This model predicts that women experience a very negative mood shift in bright conditions, and experience no mood shift in dim conditions; men, by contrast, experience a shift opposite to those of the women in these conditions. In other studies pertaining to the quality of environment, it has been demonstrated that the brightness of the space in question is associated with the level of light perceived in the space rather than the strength of the light source (Yamaguchi et al., 2007). The perception of brightness relates not only to illumination, but also to the age and gender of the perceiver.

Loewen et al. (1993) believe that the characteristics of a space are addressed by the concept of the spatial atmosphere. They argue that many factors can influence this, with relevant factors including the colour of the light and the colours of the surfaces and materials, together with size, shape, symbols, furnishings, functions and even memories (Loewen et al., 1993). Wang and Taylor (2006) suggest making use of McKechnie's (1977) environmental personalities to study people's level of fear as they

walk along the same urban path. The environmental response inventory includes factors assessing eight different intentions, the aim being to measure all individual characters relating to the individuals' everyday interaction with the physical environment. The eight concepts considered are patrolism, urbanism, environmental adaptation, stimulus seeking, environmental trust, antiquarianism, the need for privacy and mechanical orientation. Environmental trust is one of the personality-related dimensions, being said to affect people's choice of travel in urban spaces. It is related to Eysenck's (1950) dimension of neuroticism and can be regarded as relating to an individual's confidence while walking through different sorts of environments, whether urban or rural (Bunting, 1985).

Utilising the solar panels in street lighting and traffic systems to save on the costs of fuels can assist with the conservation of these (Doan, 1980) and energy management in public lighting installations (Neal and Carlton, 1980).

3.9.2   Economic aspects of lighting for public spaces and the night-time economy

The concept of the night-time economy (Hobbs, et al, 2000; Hollands and Chatterton, 2003) is theoretically related to the changes in socioeconomics, with this being regarded as "a Fordist style of capitalist production developing into a post-Fordist one" (Harvey, 1989, 2000). The night-time economy has a practical nature due to the global reorganisation of the industries, resulting in increases in competition in urban and environmental experiences. For instance, in London's Gross Domestic Product, the night-time economy contributes £26.3bn, which is equal to 40% of the similar figure across the whole of the UK. By 2029, this number is expected to grow to £28.3bn (Kolvin, 2016). Economies are not always stable, rising and falling over time. This challenges governments, businesses and citizens, as the aim is typically to improve the economic state of affairs or at least maintain the financial bottom line to save the needed sources for government services as well as protecting themselves and their life chances. Given the uncertain economic situation that has characterised modern times, governments, businesses and civic leaders have followed a strategy of improving leisure and service job opportunities that are associated with the night.

Massey (1994) takes the view that relating the global processes to the local areas where citizens' lives are led can engender specifically spatial dimensions, and so

looking at everyday concepts is a useful method of theorising the interrelation between global and local spaces.

Henckel (2009) finds that certain businesses and firms are more engaged in the 24-hour process than others. He finds that firstly, stopping certain industrial processes within short times is expensive in some cases; secondly, globalisation is a force that allows some businesses to work non-stop and continue their production to follow trends relating to international competition; thirdly, flexibility in times of work has resulted in demand for flexibility in service requirements; and, finally, businesses that need to provide everyday products (an illustrative example being agriculture) have a need for greenhouses that are heated around the clock. Having such economic environments links the city from a location of production to a site of mass consumption in which restaurants, retail trades and tourism constitute sectors of economic growth (Lovatt and O'Connor, 1995).

Gardner (1994) outlines how lighting through the night can extend consumption time into the darkness. He argues that using lighting at night is a very effective solution for strengthening the image of the city and that it is increasingly used to reinforce the economy. Artificial lighting is equally important in urban design and encouraging city marketing amongst tourists, residents and businesses, being an important means by which to ensure the safety of the general population. When artificial lighting in the urban environment is welcoming and suitable, it can serve to attract more tourists, businesses and residents to the area. Plans formulated for a city that include considerations relating to lighting may reflect these benefits (Gardner, 1994). In addition to these uses of night-time lighting, there is also the potential to welcome people with young children to engage in night-time activities within outdoor spaces (Gardner, 1994).

Auer (1997) takes the view that the night-time economy has the potential to give rise to a new lifestyle, and to a new sense of modernity, entertainment and economic affluence, radically affecting cities' images. By using the suitable lighting schemes in the correct spaces, high quality and unique atmospheres and identities can be cultivated across different parts of the city. Lighting increases the visibility of cities. In

fact, many cities are famous almost exclusively for their night-time image (Köhler 2009).

3.9.3 Lighting and crime

Light is not only used to ensure a sense of safety among pedestrians, but it is also used as a means by which to highlight crime in the urban context. In this regard, low-lit public spaces are perceived as unsafe, and so light is one of the most important tools for remedying this (Nasar and Fisher, 1992). Crime-related fear rises at night-time when it is dark (Gates and Rohe, 1987), and several studies demonstrate that this can be addressed by improving lighting schemes (Painter, 1988; Tien, 1979). Painter (1991) is concerned with women who experience crime-related fear in dark settings and finds that the appropriate use of lighting can serve to help mitigate this fear. Nasar and Jones (1997) are concerned with pedestrian paths and find that brightly-lit spaces do facilitate a sense of safety amongst people. Other studies corroborate these accounts, providing statistics that demonstrate a correlation between the brightness of urban environments and the crimes committed there (Painter, 1994, 1996). Other research suggests a high level of potential for combatting crime through the introduction of appropriate lighting, with Farrington and Welsh (2002) demonstrating that such work can reduce crime by 20%.

Research conducted by Glodt at el. (2004) examines people's evaluation of the outdoor lighting at nights within the eighteenth district of Paris. They distributed a questionnaire to 140 people for this study, where people's expectations of the lightings related to: 1) making walking safer; 2) increasing the perceived value of the city; or 3) making spaces more attractive. Although safety did not emerge as their primary concern, it was highlighted as a desirable attribute among the respondents.

Although such research suggests that lighting does reduce crime, there are further studies indicating that such work is mostly effective in reducing the fear of crime (Boyce and Gutkowski, 1995; Nair et al., 1997). Some studies also argue that lighting helps to detect criminal actions by providing better illumination for security cameras and supporting police in their investigations. Other researchers (Van der et al., 1989; Farrall et al., 2000) also put forward the view that crime is associated with many

factors, such as economic and social aspects of a society, casting doubt on the proposition that better lighting can tackle crime at the root.

3.9.4 Lighting and communities

Lighting in urban environments is said to improve confidence amongst communities as a sign of local authorities' investment in the environment, ensuring that there is no or minimal sense of neglect. This results in greater social engagement among the residents, which can also encourage them to take part in activities that contribute to the reduction of crime (Warr, 1990).

As Kohler (2009) states, the public perception of the city at night is mostly affected by the lighting of the city rather than its architectural and physical forms. However, lighting on its own is often insufficient. It serves as the link between the architecture of the space and the lighting schemes that can result in positive views being formed of a city. The incorporation of different interested groups in developing a lighting plan can result in strengthening their identification with a place and developing responsibility for it (Köhler 2009; Pease 1999).

Auer (1997) believes that urban lighting impacts on the identity and atmosphere of the city as it allows for the creation of social spaces within the environment. He mentions that a lighting scheme that considers social factors must create a comfortable, warm, reassuring and restful environment. He also believes that having variety and complexity within the lighting scheme is more beneficial than uniformity. An appropriate lighting in the urban environment makes evident the city's healthy lifestyle (Auer, 1997). Pease (1999), however, argues that a positive lighting scheme in the urban environment is most often based on high quality participation strategies and should increase people's connection with and sense of responsibility towards their city.

Nasar and Bokharaei (2016) emphasise that feeling safe and secure in an urban environment is related to three main factors, these being object detection, person recognition and orientation. They believe that, amongst these factors, facial recognition is vital, because people need to see others' facial and bodily expressions clearly to predict their intentions. If this is facilitated, it will result in a sense of security and trust amongst other people in the urban context, increasing the likelihood of social

interaction. In this respect, considering safety-related matters within lighting, which is a more functional aspect of the use of light, can also result in better social engagement amongst people (Nasar and Bokharaei, 2016).

Rea MS (2000) focuses primarily on the matter of visibility and security-related aspects of lighting that can facilitate comfort, accessibility and safety for individuals. Overall, it should be borne in mind that the night-time darkness may impose restrictions on certain groups of people, such as disabled people, the elderly and young women, which may affect their health or psychological wellness (Keane, 1998).

Charnley and Jarvis (2012) outline several matters that need to be considered in night-time urban lighting design to cultivate a successful and sustainable social and economic environment:

- design well-lit areas in the city to facilitate people's day-to-day life rather than only providing attractive spaces for visitors.
- seek to involve local communities in the lighting or spaces to develop a sense of belonging amongst them; the lighting of the space could even be changeable on the basis of special events to be run, enabling a greater degree of flexibility;
- encourage local communities to use the urban spaces at night-time.
- test different lighting guidelines and codes that may be old-fashioned and over-specify high levels of light.
- keep in mind that the quality of lighting in the space can reduce the fear of crime as opposed to the cruder measure of lux levels.
- make use of shadows beside light within lighting schemes: the layering and strength of shadows beside the differing levels of light can assist in creating a sense of place.

Some of these recommendations are of particular interest to the present research. This is true of the recommendation to involve local people in the lighting scheme, which is an essential approach to take in relation to placemaking, and of the recommendation to leave some spaces darker with shadows beside illuminated spaces; this too can facilitate an attractive environment and promote a sense of place amongst people. While these are all important recommendations to bear in mind, they fail to provide a clearer sense of what is meant by quality of light. This raises the

question of what guidelines should be considered as promoting the development of a high-quality lighting scheme that can have such an influence on people's perception towards a space. Another matter to consider not covered within the suggestions above relates to the economic aspects of the lighting installation, as well as what guidelines pertaining to this matter might look like.

3.10   Summary and Conclusion

This chapter presented the existing literature on the different aspects of lighting within urban environments as the dependant variable in this research, defining the role and value of public lighting entailing the need to understand lighting's particular contribution in the context of cities. This responded to the aim to understand lighting, its importance, potentials, influences and features as the main variable in this research.

This chapter starts with presenting how lighting can influence people's social behaviours. 'Social' in this context refers to the practice, values, connections and institutions that structure collective life. Accordingly, it is about the ways people organise themselves to engage in a way of life. Without light, public spaces cannot function as spaces for socialising in cities, while, with lighting, open public spaces can serve as places for social gatherings.

In relation to the literature concerned with 'the social,' the work of Lynch and Gehl was highlighted as being especially influential in relation to lighting design in open spaces. Gehl (2011) regards lighting design as an influential physical feature within public spaces that can promote social activities amongst people. His work makes clear that lighting should not only light up the space for the people and spaces for the sake of visibility, but also be constructed such that it facilitates enjoyment and a sense of security. This way, a public space can serve as a place for socialising.

Gehl and Lynch detail in their respective works the two different methods they utilise for gathering data in open spaces. Gehl was seen to rely on behaviour observation methods; Lynch, by contrast, considers people's own understandings and descriptions of their practices, including obtaining data through interviews and mapping activities. Through this method, it is possible to gain a general mental image of the exterior

physical world of persons and a social role, stimulating emotional security among them.

This chapter then presents the secondary research on the potential of lighting in facilitating different experiences within public spaces. Artificial brightness is important in this regard, making possible new perceptions of urban spaces at night that are noticeably different from those of the daytime. Much of this literature not only emphasises the importance of lighting in public spaces, but also considers the influence lighting can have in different respects, thereby serving as an important source of knowledge for the present research.

This chapter then presented the different lighting features which helped to understand which lights are considered appropriate for heritage sites and which are being less so for other setups. Ambient lights are commonly used in historic sites to illuminate the whole space without any remarkable emotional or aesthetic purposes. Interactive light, by contrast, can be used to encourage people to interact with the site and the elements within it through lighting. Apart from the technological aspect of the lighting, interactive light can be combined with a narrative in order to present the history of a site. At the same time, dynamic light was found to be inappropriate for outdoor spaces. Responsive light is also not suggested in the literature for historic sites, being usually used for functional requirements such as street lighting or traffic lights that turn on in response to the need of a user.

This chapter also presented some of the most important benefits of lighting in urban spaces in night-time such as its effects on sociability and people's social lives, people psychologically and their visual perceptions, people's experiences and perceptions of the urban public space, ensuring safety and the associated sense of safety. Lighting at night-time was found to strengthen the image of the city and thereby bolster the economy, encouraging city marketing among tourists, residents and businesses.

It then moved on to outline several negative results associated with lighting in urban spaces in night-time such as light pollution in urban spaces and health-related deficiencies, increased chances of breast cancer, sleep disorders, increased chances of metabolic disorders, obesity and diabetes. Such health problems can influence the economics of the society, often resulting in additional costs to healthcare systems.

Studying these aspects of lighting in urban spaces and the positive and negative effects of lighting helped in building a comprehensive understanding of what needs to be approached through lighting design for historic sites. This secondary research is also used in interpreting and discussing the findings of the primary research. The next chapter will focus on the second independent variable which is the historic site as lighting for these urban spaces have their own specific considerations. These will be presented in the next chapter.

Chapter Four: Historic Sites and Lighting

4.1   Introduction

This chapter considers historic sites and the role of lighting in historic sites. It comprises two parts, the first of which is concerned with historic sites, their value and impact on human life and how historic sites can shape both society and social capital. Then, it considers the UNESCO world Heritage Sites as part of historic sites around the world are included in this list. Although this research aims at any historic site and the final findings can be applied to historic sites in general, however, studying the criteria for world heritage sites can help in understanding the important aspects and requirements for important historic settings in general. Accordingly, the criteria for inclusion, as well as the benefits and drawbacks associated with this scheme is presented. Studying these aspects firstly provide us with what needs to be taken into account when working in these historic sites and giving lighting design guidelines for them, and secondly gives us an understanding on how we can benefit these sites through lighting, while making sure lighting doesn't add to the disadvantages.

Within the second part of this chapter, the impact of lighting in historic sites is discussed, as is the matter of how historic sites and lighting schemes can inform each other, necessitating consideration of history and the position of lighting design in the context of world heritage sites. The opportunities and abilities of lighting in historical environments are also presented by means of consideration of the relevant literature. Studying these literature give us a clear understanding of what the literature already suggests for lighting historic sites, what is found as important considerations and how lighting should be used in these sites. The chapter is rounded off by consideration of the negative aspects of artificial lighting specifically in historic sites.

4.2   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 (English Heritage, 2002). Based on the definition provided by English Heritage (2000), 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 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 inclusion of structures and places inhabited by people in both physical and imaginative senses (English Heritage, 2000). The historic environment encompasses all things around us that have been constructed, shaped or affected by the activities of humans over the course of history (English Heritage, 2002). It is clear that the aforementioned definitions of the historic environment are not overly distinguishable from the general concept of 'heritage,' which has recently evolved to encompass more than material culture and now also covers intangible matters such as spoken historical recollections, dance and music.

One of the main discussions that has recently emerged pertains to who is responsible for defining history and heritage. Definitions from academic circles generally focus on the negotiated and in-process aspects of the building when determining what can be deemed to be heritage. Several researchers have maintained their position that the definition of heritage is inherently linked to elite authority, particularly in relation to specialists in the field, or what Laurajane Smith regards as 'authorised heritage discourse' (Dicks, 2000; Waterton, 2005).

4.2.1   The value of historic sites

In studies on environmental assessments, it has been argued that fundamental qualities in terms of human perception and evaluation exist in fields that include psychology (Koch, 1969) and architecture (Alexander, 1979). Furthermore, scholars such as Lynch (1972) and Schama (1995) emphasise the significance of historical value for people's wellbeing, predominantly in the philosophical sense rather than from an experimental perspective. In terms of Kaplan and Wendt (1972), historical value has been directly or indirectly determined to be an influential environmental quality for humans. In the indirect sense, it can serve as a contributory factor in terms of the four fundamental environmental characteristics that these scholars propose: coherence, identifiability or legibility, complexity and mystery (Kaplan and Wendt, 1972).

Historic sites are valuable environments within urban spaces. In 2005, The Institute of Historic Building Conservation (IHBC) released a statement emphasising the broad advantages of conservation practices, specifically with regard to public policy goals.

This statement espouses the view that, firstly, historic sites can have vast social, economic and environmental value; secondly, such sites have public value, with the statement explaining that these values are primarily intrinsic, attracting public support, and helping to engender distinctiveness and local empowerment; thirdly, historic sites promote cultural, learning-based and skill-based values amongst people.

Studying the three groups of advantages of historic sites, it becomes apparent that these sites have a role in attracting tourism, enriching the economy and supporting local communities through the development of work opportunities around these sites. These sites can serve as leisure destinations and present opportunities for social gatherings. They also have environmental value in terms of their provision of sustainable use of resources and sustainable development patterns. In addition, the historic environment can serve as a tangible resource for the teaching of social, economic, political, and human history, helping to establish a better awareness of contemporary society. In this regard, such sites are also useful in the context of the resources they can provide to schools, as well as continuing and adult learning. They often embody the culture of the region and the country as a whole, incorporating a broad variety of culture-relevant objects and activities. Conservation practices often give rise to skilled jobs (professional, technical, skilled manual, and vocational) and the need for services from craft-based industries. The historic environment can also serve as a basis for understanding architectural design and urban morphology, creating a context and stimulus for creative and innovative new designs and the development of new architectural forms.

4.2.2   UNESCO World Heritage List

In the 1920s, countries around the world were alerted to the growing threat posed to their cultural and natural heritage. However, although extensive discussions occurred over many years and reports were drafted, there were no substantive outcomes. The establishment of international programmes aimed at preserving the Abu Simbel temples in Egypt in 1959 and protecting Venice after a series of catastrophic floods in 1966 represented the initial attempts by UNESCO to protect global heritage. In November 1972, in Paris, UNESCO adopted the convention aimed at protecting cultural and natural heritage around the world. The objective of the Convention is to

promote the process of identifying, protecting and preserving natural and cultural heritage sites across the globe that are regarded as being significantly valuable for humanity. Nevertheless, it was not officially implemented until 1977, with only 20 countries ratifying the Convention (Strasser, 2002).

Although this research aims to develop lighting design principles for historic sites in general, this chapter will also study the relevant literature to World Heritage Sites. Learning about the criteria and critical factors of world heritage sites helps to understand what aspects are important and need to be taken into account to protect and preserve these sites which are some of the many historic sites around the world. Considering these in the lighting design principles for other historic sites can also beneficiate those sites to be protected and preserved as well.

4.2.3   Criteria for inclusion as a World Heritage Site

To be included on the list as a world heritage site, as Frey and Steiner (2011) explain, candidates should satisfy a minimum of one of the 10 criteria put forward, which are implemented in conjunction with three general factors, relating to whether the site in question in unique, historically authentic and has a status of integrity. Six of the 10 criteria concern cultural sites, while the other four relate to natural sites. Some of the aspects relate to whether the site represents a masterpiece of human creation, illustrates a critical interchange of human values in a culture or in a certain time, or exhibits an original or an outstanding statement or serves to represent a culture that is no longer in existence. Furthermore, there are also criteria relating to whether the site in question is an explicit work of architecture illustrating a specific part of the history, or an outstanding example of human's traditional settlement representing a culture or interactions with the environment. It is also considered whether the site in question is related to customs or traditions with artistic and literary works of unique global significance (WHC, 2008, p.16).

4.2.4   Integrity and authenticity as critical factors for World Heritage Sites

According to the World Heritage Committee (2008), in order to include sites in the world heritage list, 'authenticity' and 'integrity' are two critical factors that require to be met. The convention provides that, "to be deemed of outstanding universal value, a

property must meet the conditions of integrity and/or authenticity and must have protection and management system to ensure its safeguarding" (WHC 2008, p.78).

The notion of integrity is formulated with a view to ensuring that all crucial elements of a site are not damaged. According to the Operational Guidelines (WHC, 2008, p.18), integrity pertains to whether the natural and/or cultural heritage site is whole and intact; hence, when assessing the state of integrity, it is necessary to evaluate whether the site (a) contains all components required to portray its comprehensive value; (b) is sufficiently large to ensure that all features and processes that denote the importance of the site are represented; and (c) has been adversely affected by development and/or is in a state of disrepair.

Authenticity, on the other hand, is a more complex concept to define. Larsen (1995) claims that, in comparison to the notion of integrity, the evaluation of authenticity comprises many different factors, with the cultural criteria being more vague. In fact, several researchers, such as Jokilehto (2006), Stovel (2007), Labadi (2010) and Farrelly, Kock and Josiassen (2019) consider what exactly authenticity pertains to as one of the requirements in the World Heritage, with such studies concluding that this criterion has tended not to be clearly defined, especially in earlier versions of the World Heritage Conservation document. Stovel (2007) finds that, since the inception of the World Heritage Convention, authenticity has not been understood or defined properly as a qualifying condition for inscription. He argues that many researchers have treated the two concepts of integrity and authenticity as if they were one, referring to them as a single criterion of "integrity/authenticity," while some others who have appreciated the difference between the two concepts have failed to make clear what the differences are, with none having provided the demanded Statements of Authenticity and Integrity. Von Droste and Bertilsson (1995) also state that "the interpretation given of authenticity was challenged by several members who did not consider that it necessarily entailed maintaining the original function of the property which, to ensure its preservation, often had to be adapted to other functions" (Von Droste and Bertilsson, 1995, p.3).

Making reference to Jokilehto (199), Labadi (2010) explains that authenticity is usually defined through the etymological definition of the word that is "original as opposed to

counterfeit" (Jokilehto 1999a, p.296). Jokilehto (2006) states that, in the earlier version of the World Heritage Operational Guidelines, there was a 'test of authenticity' that referred to four parameters as aspects of authenticity, these being design, material, workmanship and setting. All such parameters referred to tangible materials of the heritage site. Labadi (2010) points to the reference being made to authenticity as 'original' and as 'having been frozen in time,' and views this as being the result of the Operational Guidelines' four degrees. Later, in 1994, experts held meetings to define authenticity in Nara, where a new definition for the 'conditions of authenticity' was given in the revised Operational Guidelines: "Depending on the type of cultural heritage, and its cultural context, properties may thus be understood to meet the conditions of authenticity if their cultural values (as recognized in the nomination criteria proposed) are truthfully and credibly expressed through a variety of attributes, including …" This statement was followed by a list, including the four initial parameters as well as further intangible heritage parameters, comprising traditions, techniques, language, spirit and feeling (UNESCO, 2005, Paragraph 82). This demonstrated that the committee, although it had pointed to authenticity as a required condition for World Heritage, only developed a broader recognition of the different aspects of culture and heritage in 1994. Dushkina (1995) argues that the parameters relating to the tangible (form, setting, workmanship, materials) and the intangible (function, use, tradition, spirit) were the bearers of authenticity in a monument that transmits authenticity to people, with "authenticity [being] a value category of culture" (Dushkina, 1995, p.310).

However, once again, this time in 2003, the newer version of the Operational Guidelines were formulated to state that authenticity is not a value itself. Sites were regarded as being ineligible to qualify as World Heritage Site solely on the grounds that they are highly authentic; rather, inscribed properties should initially demonstrate "outstanding universal value" (Stovel, 2003, Annex 4), and only then should it be demonstrated that the qualities embodying those values were "authentic,", with this being taken to mean "truthfully, genuinely and credibly, expressed by the attributes carrying the values" (Stovel, 2004, p.3). Stovel (2007) regards 'authenticity' and 'integrity' as being the ability to convey significance, together with the ability to secure or sustain this significance. Feilden and Jokilehto (1998) explain that a heritage resource is considered to be authentic if it is substantially original and legitimate

according to the original construction, but the process of aging has caused it to deteriorate. For historic structures or sites formed as works of art, the concept of authenticity can be comprehended with regard to the process of creativity based on which it was originally conceived as a legitimate product of its era, and incorporates the impacts of the course of history (Feilden and Jokilehto, 1998).

With the qualitative nature of authenticity and the fact that part of it has an intangible nature according to the literature, counting a site as authentic is not a straightforward practice. As Dushkina (1995) argues, tangible authenticity can be observed for a site, but the function of the property is changeable, and the original form will have been lost. She explains that the threshold must be found before the property's authenticity is lost so that it can be perceived as it is. Jokilehto (2006) puts forward that all heritage relating to humanity includes an intangible dimension, no matter the form this takes. He also explains that interpreting authenticity in a historic site or property is a very difficult process, adding that the World Heritage Committee are responsible for judging whether the requirements are met and that it is not easy to guarantee that a reasonable judgment will be reached with no in-depth knowledge of the place, especially having regard to the diversity of references across the various social and cultural contexts (Jokilehto, 1994).

4.2.5   Advantages of the World Heritage List

Frey and Steiner (2011) categorise and discuss the various advantages and disadvantages of the World Heritage List. For these researchers, the positive aspects of the UNESCO can be divided into two general groups: the focus of attention, and the type of protection offered. Thus, on the one hand, specialists will increase public awareness regarding the significance of preserving sites with natural and cultural importance (Van and Bart, 2005). The relevant authorities will also develop increased awareness of the cultural and natural significance of national sites. Prospective donors are therefore motivated to contribute to cultural, religious and artistic causes. Furthermore, commercial enterprises will be motivated to provide services to visitors interested in the site.

At the same time, for a historical site to be considered for the UNESCO List, there is a requirement to evaluate its status in relation to integrity. Nations are therefore

required to preserve and maintain their sites. Additionally, the World Heritage Commission has the capacity to offer technical assistance for the purpose of preserving sites included in the list. The committee provides explanations for the management plan requirements, which are considered to be important frameworks as they involve the collaboration of various heritage experts (Frey and Steiner, 2011).

4.2.6 Disadvantages of the World Heritage List

In relation to the aspects of being included on the World Heritage Site that are less beneficial, Frey and Steiner (2011) argue that there are at least four matters to consider, these being: the contentious choice of sites on the list; the excessive numbers and categories of sites; the substitution-based impact on natural and cultural sites excluded from the list; and the extensive damage caused to sites through increased numbers of visitors, conflicts or by terrorist groups exploiting the popularity of a site to promote their cause. Worley (2015) points to the specific example of the terrorist group ISIS ('Islamic State of Iraq and Syria') and the widespread destruction it has caused to the historical religious site in the historic city of Palmyra in Syria, which had remained largely unscathed since its construction more than 2,000 years ago. UNESCO added Palmyra to the list of World Heritage Sites in 1980 (UNESCO, 2016).

Another matter that should be considered in respect of heritages site is people's perceptions. People's perceptions and emotions regarding the heritage site presented (or destroyed) are especially important in determining whether it should be classified as being associated with "world heritage." Analogous to the contextualisation of Mitchell (2001), it is the position of the present research that a heritage site's meanings - as opposed to its objective characteristics - are necessary for determining the perspectives of visitors regarding how the site should be designated. Furthermore, it is established that heritage is not necessary to be considered antique, or original; it is more important that the site be perceived as having significance for human culture. These conclusions emphasise the association between the physical and imaginary dimensions of the tourist experience conceptualisation (Knudsen et al., 2008). The primary debate pertains to the matter of which environmental factors utilised by heritage and cultural sites have the greatest impact.

From the literature, it is clear that the sites listed by UNESCO as World Heritage have specific values for humans, whether these are cultural, traditional or historical. In all cases, what gives them such importance is their uniqueness, historical authenticity and integrity. Accordingly, when a historic site is listed as World Heritage, it comes to be understood that such qualities were already present in relation to the site, meaning that the site in question is already a site of some importance within the location. These sites, as found through the literature, are not only important places for the locals in terms of the value and meaning that they have, but they also serve as major tourist destinations. The lighting of such sites that serve as points of attention and are associated with specific maintenance and protection must reflect considerations relating to integrity, authenticity and uniqueness. Considering integrity in lighting these sites must be met through the use of installations that are set up such that they cause no harm to the historic buildings. Authenticity, however, seems to be a much more difficult matter to consider as it includes within its scope as a concept intangible parameters that are difficult to assess. How, therefore, can the authenticity of a heritage site be respected in the addition of lighting features?

4.3   Historic sites and lighting

Lighting, besides the considerations relating to science that it includes, also involves a significant principle of design. Gardner (2005) takes the view that lighting affects the way that people interact with each other and with their surroundings. Brandi (2007) believes a city's lighting should also attract people to the city, directing and enchanting them. Joels (2006) emphasises that lighting is a crucial factor in improving the harmony between functional and visual statements in the urban context. And Schmidt and Töllner (2009) explain that light can be intentionally used to exclude sites regarded as unpleasant or incorrectly highlighted in the environment, ensuring that the appearance of the city has positive psychological effects. As discussed previously, research shows that the distribution of light in a space influences people's feelings, impressions and reactions within the environment (Flynn et al., 1993).

Roger (1998) argues that designing with light is based on psychological perception associations. A well-designed lighting structure is an essential parameter in defining the character of a space, as it brings architectural elements to life. Technological,

political and economic aspects are involved in urban lighting design as well as historical, cultural and social aspects, with the combination of factors making this a complex field of design (Schivelbusch, 1995).

Rankel (2014) takes the view that historic sites in particular have significant potential in terms of the provision of settings for evening entertainment and social events. Nevertheless, people generally frequent them during the day and, when darkness falls, they become less appealing as the ability to see is reduced. Those engaged in addressing the problems of improving the experience of visitors are responsible for ensuring that the historic site is suitably illuminated. In recent years, places of archaeological interest have come to be more accessible to the general public, to the extent that archaeological sites are now considered to be places of memory (Di Salvo, 2014). This transformation incorporates two principal groups: those with the responsibility of preserving culturing heritage, and those who visit heritage sites. Evidence of this change can also be found in the growing number of people who choose to visit archaeological sites, with this also demonstrating that there is now an increased focus on sharing the knowledge sourced from cultural heritage that can then be transferred to the non-expert public.

4.3.1 The development of lighting in historic sites

The chronology of illumination within historical sites is analogous to 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 the 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 (Van Santen, 2006; Ünver, 2009; Pingel, 2010).

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 utilisation of lighting within historical sites witnessed another transformation. In this era, urban lighting was comprehensively redesigned on the basis of what were known as urban lighting masterplans (Sirel, 2006). It was demonstrated by experts that light is capable of visualising 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 evocation (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 and Larkham, 2003).

At the start of the current century, drawing on previous studies and experience, lighting developers began to utilise 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 recognised 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).

4.3.2   Factors to consider in lighting historic sites

Tural (2001) contends that, when historical sites and structures in urban areas are suitably illuminated, this can impact the behaviours of citizens, motivating them to visit such spaces at night, an action that would be unlikely to be contemplated if only functional street lighting was installed. For Tural, the lighting scheme in historic sites can affect people's behaviour, and so the characteristics of lighting constitute an important factor that requires to be considered. Illumination of historical sites has significant importance as a result of the cultural dimension of the site in question, helping to frame the correct value of the historical site and its cultural heritage.

Indeed, light is critical in terms of its ability to evoke and encourage the experiences of visitors engaging with the historic place, thus giving rise to emotion, suggestion and

evocation (Di Salvo, 2014). Steffy (2002) argues that the way in which individuals react emotionally and mentally to illumination is dependent on the power, hue and pattern of the light, as well as the background to the light and the culture and attitude of the individual. In addition to the viewer, the placement of the light, how it is distributed and its level of intensity affect the manner in which the light psychologically influences the perceptions of individuals. In relation to the process of planning appropriate illumination for a site, Teicholz (2001) takes the view that different factors should be considered, including the colour-related properties of the light, illuminance, luminance, efficiency and satisfaction, the main costs of the light in addition to lifespan-related expenses and sustainability factors, electricity costs and the ability to maintain the lighting.

While all the above aspects are highlighted as important lighting characteristics, it should be noted that, for different cultures, different light features may have different meanings as a result of each culture having its own unique characteristics. So, although there may be recommendations to be made on some of the lighting aspects, these need to be adapted and studied within the unique context to be considered.

As Di Salvo (2014) suggests, in crafting an effective lighting design, it is important to recapture the historical memory of the site and to ensure that its archaeological fragments are considered. It is also essential to explain a path hierarchy and to develop archaeological heritage in accordance with the site and its context, and to provide the ability to read the archaeology and develop spaces in which visitors can walk, contemplate and converse. Rankel (2014) explains that the light is reflected on the surface of the environment and it can, therefore, be observed in respect of that specific surface. This means that, in planning the lighting scheme for a historical site, there is a need to have regard to the textures that may be illuminated. Innes (2005) believes that suitable illumination should consider the architectural properties of the space to be brightened. This demonstrates that it is essential to conducting research into historic sites and the nature of the history of the site itself before developing a lighting scheme. Yet further aspects - such as the physical features of the site, the materials, the sections of the site and even damages to the site - all also need to be considered in the design process. Thus, when dealing with light in historic sites, it is not

only the lighting characteristics that need to be studied, but also the heritage site itself as well as the context of the historic site more widely.

4.3.3 Lighting design possibilities for heritage spaces

In 2018, ARUP (2018), a multinational professional firm that provides engineering, architecture, design, planning, project management and consulting services, published a brochure outlining the ways in which lighting can be used as a tool for placemaking, an opportunity to replace landmarks and an educational palette for observers. This brochure also discusses the role of lighting designers when working with heritage environments and outlines several possibilities for heritage spaces across four primary areas: education, economics, repurposing and sustainability. In relation to education, they argue that lighting can display the development of technical lighting, make evident certain features of historic expertise and demonstrate how light has been used in the past to form the space in question. Economically, through the use of lighting in heritage sites, specific monuments can be displayed, and lighting can be used as a tool for placemaking to facilitate engagement by visitors and through tourism, and to develop spaces where visitors can reside. In terms of repurposing, heritage sites can serve as a place for contemporary lighting specifications, conserving heritage luminaires and revealing architectural shapes with lighting. Sustainability can also be realised through the transformation of extant structures, reducing energy consumption levels and enhancing the safety and satisfaction experienced by residents (Blow, 2018).

These four categories are useful for highlighting the different possibilities that lighting can offer across heritage sites. However, there remains an argument to be made that, in relation to, for example, education, lighting can go further than the brochure discussed above seems to suggest. In this regard, it has the potential to illustrate the history of the site as well as the social interaction of the people who previously lived within or made use of the site in question. In this regard, lighting is more than just lighting what is there in the historic site; it has the potential to tell a story and illustrate more than what is physically already available for the purpose of educating visitors. The installation of such facilities can also serve to further other goals associated with the site in question, such as tourism. Another matter in relation to which Arup's

recommendations fall short is the role of people and the impact of lighting on social interactions amongst people. While these four areas constitute valid areas of concern, they cannot be regarded as covering all aspects of the lighting on historic sites; it is also crucial to consider the social and behavioural aspects relating to the people experiencing the site. In this regard, it can be said that people constitute the core of the site.

4.3.4   Lighting designers' interpretations of historic sites

Alderson and Low (1996) explain that interpretation is regarded as both a programme and an activity. In the programme, a series of objectives are established pertaining to the aspects of the site that visitors are intended to understand; the activity involves the abilities and methods that facilitate the creation of this understanding. According to the historic sites sub-committee of the American Association of Museums (1992), for accreditation purposes, interpretation can be defined as an organised approach formulated with the aim of allowing visitors to understand the history and importance of occurrences, individuals and items associated with the site. Conversely, according to the definition proposed by Freeman J. Tilden, the author of *Interpreting Our Heritage* (2009), interpretation is a form of education that, beyond being concerned purely with the transmission of facts, is intended to uncover meanings and associations via the utilisation of authentic artefacts, through hands-on experience and explanatory media.

This gives rise to the question of whether these definitions contradict each other. It appears that this is not the case, as they fundamentally imply the same proposition: in order for true understanding to occur, it is necessary to supply more than factual data. Visitors will only understand if they are shown meanings and associations. The definitions are only differentiated by the fact that one refers to an organised effort while the other describes an activity, with one consisting of a programme and the other the procedure followed in the implementation of the programme. Both definitions are essential for interpreting historic places. In the absence of a plan, interpreters may be wasting their time in enabling visitors to comprehensively understand only peripheral or trivial matters.

According to Alderson and Low (1996), the degree to which visitors can comprehend the significant meanings and associations of the site is dependent on the programme

and activity, which combine to enable the interpretation. This not only incorporates the verbal, textual, audio-based and visual elements delivered by the interpretation personnel, but also various different intellectual and sensory perceptions acquired on the basis of the standard of the restorative process, the genuineness of fixtures and the efficacy of artefacts. Although visitors may choose to frequent a site for various different purposes, the objective is accomplished if they can successfully understand why the historic place has importance for the community, the region, the country and the rest of the world, and, primarily, the specific visitor.

Alderson and Low (1996) argue that the level of interpretation required in a historic site is dependent to a large extent on the extent to which visitors of the site already have relevant background knowledge. Historic places with which people are already familiar can give rise to minimal interpretation. Interpretation that amalgamates sounds and visual imagery has an effect that exceeds that of purely audio-based recordings. There is vast potential for such a combination that can range from narrated slide presentations to extensive dramatic productions involving sound and light. Loe and Rowlands (1996) contend that light patterns beamed onto the surface of a building could clash with the original purpose of the architectural design. In this regard, the lighting design should support rather than devalue the architectural ideas and historic legacy.

In relation to lighting features in historic sites to convey interpretations, the literature is unclear on the matter of whose interpretation should be regarded as standard. In other words, the lighting designer is responsible for designing the lighting scheme on the basis of his or her expertise in the field of lighting. But given that the lighting designer is unlikely to have comprehensive expert knowledge of the heritage site, questions arise as to the role that the designer's interpretation should play. Furthermore, if the designer in question to present an interpretation of the historic site, it is also *prima facie* unclear what facet of the historical site should be interpreted. In this regard, there is a danger that the specific facet selected will be selected such that it gives rise to a skewed picture for the observation of those experiencing the site.

4.3.5   Historic sites, lighting, and social benefits

As discussed in Chapter Two, 'the social' denotes the actions, values, associations and organisations that collectively constitute people's lives. Murzyn-Kupisz and Działek (2013) allude to the notion that historical places can serve as 'community hubs,' these being areas in which trust is formed and people can form interconnected social relations. Frequenting historical places with relatives or companions and engaging in group activities when visiting or taking advantage of the additional services offered (e.g. dining) can catalyse and enhance bonding between people. While visitors' motivations for going to historic places or institutions may vary, the primary motivational factors include the desire to accompany others, reveal something of interest to relatives or peers, and to take advantage of the opportunity to engage with other visitors. They believe the focus of lighting in historic sites should be on humans instead of vehicles, cost-effectiveness or planning for its own sake. In the design of social areas, it is necessary to consider numerous different kinds of individuals, and their social distinctions can often significantly affect their level of interaction with both light and space.

4.3.6   The effects of historic site lighting on tourism

Although tourism is not the key focus of the current research, historic sites which are the focused urban space are one of the attraction points for tourists. Mallet (2012) argues that most of the studies which have focused on the link amongst tourism and lighting have only focused on the aspects related to urban planning and development . in particular, those studies which have focused on tourism destination image have also merely focused on night-time attractiveness (Baloglu & McCleary, 1999; Kim & Perdue, 2011; Xu et al. 2018), and not on aspects such as night-time illumination of attractions. It is important to understand how the lighting design of historic sites may affect the presence of tourists and the cos and pros this attraction may have for the placemaking process in these urban spaces. According to Giordano (2018) many cities now clearly use lighting design as a tool to encourage night-time tourism. According to Camprubí and Coromina (2019), destination lighting which is an effective aspect on how the tourists' image of the urban space is perceived has not been explored adequately. So, the literature in relation to tourism is studied to help with the understanding of the different influential variables on the lighting design.

Eilat and Einav (2004) put forward that pollution caused by tourism is lower than that of manufacturing emissions. The main focus of heritage tourism is on the location's natural, cultural and historic values (Boyd, 2002) and is more than merely an interest in history. Ayala (1996) claims that a significant factor in the development of effective tourist sites is the creation of a distinctive identity and perception of the place. As a result of the expansion of tourism, a large number of travellers choose to visit locations that provide a sense of uniqueness and have a particular identity. This factor has facilitated the growth of this sector since the middle of the 1980s.

Attractions that are considered to have the most importance for tourism focusing on culture and heritage are those with historical features, as they allow people to reproduce and re-experience the past. Indeed, heritage tourism appeals to those interested in the cultural, historic and natural characteristics of a site, rather than its history alone. Boyd (2002) outlines how this tourism segment incorporates various different settings and areas via the exploration of the natural and cultural attributes of those residing in that setting, and emphasises - in addition to industrial, urban and historic features - the aesthetic qualities of nature within that environment.

A study conducted by Knudsen et al. (2008) concludes that the way in which visitors perceive heritage places is highly significant for the potential of the site in question to be classified as a world heritage site. Their findings also demonstrate that a site is not required to be considered antique or authentic in terms of human culture. This indicates the importance of the association between the physical and imagery dimensions to conceptualise the tourist experience. Another significant factor is the components that provide a particular site with greater uniqueness in comparison with others. It is evident that distinct cultural and historical places appeal to diverse types of people in accordance with their personalities and idiosyncrasies (Bonn et al., 2007). It is therefore necessary, in seeking to increase the attractiveness of a site, to be aware of the feelings and emotions of different types of people with regard to the space in question.

While a variety of different factors have been identified as being of relevance for attracting tourists to a site, there is an ongoing debate regarding the effects of being listed as a UNESCO World Heritage Site (WHS) (Arezki et al., 2009). Yan, Lin and Huan

(2002) adopt a case study methodology to systematically and economically investigate the impact of being listed as a WHS, and conclude that being listed is significantly influential on the ability to appeal to larger numbers of tourists. Furthermore, Cellini (2011) outlines comparable research conducted in Italy based on data from the tourism sector from 1996 to 2007, and reports that being listed as a WHS was not highly influential in terms of increasing tourist numbers during this period. Huang et al. (2012) arrive at a similar conclusion.

Bonn et al. (2007) demonstrate the significant role that the physical conditions of a heritage site play in influencing the attitudes of visitors in relation to the attraction they feel in respect of the site, as well as the likelihood that they will visit the site again in the future and report on the experience positively to their relatives and peers. This study concludes that atmospheric factors such as colour and lighting have greater significance than design factors and the social setting.

4.3.7 Creating an atmosphere in historic sites through lighting schemes

Lighting has the potential to facilitate an atmosphere across different spaces, and different researchers have studied how various lighting features can result in the creation of atmosphere. For instance, the atmosphere created within a floodlit football ground during night-time matches can serve to enhance the emotion experienced by supporters as they witness the varying fortunes of their team (Edensor, 2014). At dance events, lighting is utilised to evoke a variety of different atmospheres for the purpose of provoking and enhancing movement, with animated lighting being synchronised with a tempo of fast beats. Numerous installations displayed at light festivals and works of art attract a variety of different types of people to a communal atmospheric gathering that promotes friendliness, which Koch and Latham (2012) refer to the nurturing of people's ability to flourish in collaboration with others such that there is a shared perception of being open to difference. Being absorbed into such joyful, metamorphosed atmospheres facilitates a more socially integrated, cooperative, and emotionally-participative experience (Stevens, 2007).

Petty (2008), on the other hand, argues that an absence of light can assist with cultivating different kinds of atmospheric conditions. Furthermore, Bohme highlights

that atmospheres can give rise to atmospheres in which people report succumbing to the influence of their surroundings, adding that this atmosphere may harmonise one's mood such that the environment serves as an extension of that mood (2016, p.5). Additionally, individuals who enter the atmosphere are customarily informed by frequently challenging cultural values and habits of trepidation. Similar to different components of the built environment and other factors that contribute to the atmosphere, light is subjected to assessments and symbolic comprehensions. Cultural perceptions of specific patterns, hues and lighting levels are influential on reactions that can facilitate the generation of atmospheres marked by sadness, unfriendliness, uneasiness, exhilaration or geniality.

Hence, aside from the practical installation of lighting, as Laganier and Van der Pol (2011) note, designers of light schemes require to build up extensive knowledge of the cultivation of atmospheres and the associated practice of transforming the setting through lighting. Illumination, Cochrane (2004) suggests, is capable of revealing or engendering texture, accents, spatial transition, sensory cues, safety and the impression of safety, atmosphere, cerebral temperature and drama within the city, exhibiting diverse characteristics of sparkle, glow, glare, highlighting and diffusion.

In recent times, heritage attractions have come to utilise illumination in addition to sound-based elements to develop distinctive atmospheres and attractions to encourage engagement by increased numbers of visitors (Cash, 2004). Jakle (1987, p.8) claims that 'Genius Loci' is more effectively expressed by visitors in comparison with locals, as they actively engage in seeking an experience with the place. Furthermore, those who manage cultural and heritage sites are keen to embrace any supplementary tools that can enhance the general visitor experience and ensure that it is favourable. For instance, the Brooklyn Museum implemented a $63 million project aimed at enhancing their product, and the Taft Museum of Art in Cincinnati recently re-opened its doors after renovation work costing $22.8 million (Art Business News, 2004). These significant financial investments were made in order to develop fine-tuned emotional settings for visitors within the context of the heritage site. An important element of the creation of this perfect experience is the development of a suitable atmosphere or physical conditions allowing the display, exhibit or attraction to be viewed. Put

differently, if visitors are attracted to the environment of the location, their overall experience can have a direct influence on whether they evaluate the exhibits/displays positively. This, in turn, means that the attitudes towards the heritage site are likely to be positive, increasing the possibility that visitors will intend to return (Obermiller and Bitner, 1984). Additionally, the study implies that suitable atmospheric components influence the viewpoints and mental pictures visitors leave with, with this also influencing whether they are likely to return and/or recommend the experience to friends, colleagues and family. Thus, management teams can utilise atmospherics as virtual metaphors to communicate an image, influence perceptions or facilitate the recollection of extant positive attitudes.

Light is a universal natural element that creates form within the world, having the power to psychologically and physiologically influence the environment (Deitz, 2003). The standard and volume of light within a space are of particular importance, having the ability to impact how people perceive space visually (Ghosh, 2004). As a result, given the findings of the literature, illumination is capable of creating a distinctive atmosphere within historical heritage locations, increasing their appeal to both visitors and local residents.

4.3.8 Drawbacks associated with lighting crafted for historic sites

As discussed in Chapter Two (section 2.7), there are several environmental and health-related issues that result from or at least can be exacerbated by urban lighting. While many of these problems can occur within any urban space, some of the issues pertain specifically to historic settings. For instance, notwithstanding that sky pollution and environmental health problems occur across a gamut of settings, according to O'Farrell and Heritage (2007), lighting can also impact certain species that are more likely to live within historic structures, such as owls and bats. In addition to such environmental issues, there are two additional negative outcomes of lighting that specifically pertain to historic sites, these being the problems of overtourism and damage to the historic site in question.

As Goodwin (2017) notes, overtourism arises when hosts, guests, residents or tourists come to believe that the number of people visiting a location is excessive, leading to unacceptable deterioration in quality of life in the location or a detrimental impact on

the standard of the experience. This contrasts with responsible tourism, which is implemented to improve places for both tourists and residents alike. The heritage sector similarly stands to benefit from growing visitor numbers. Weber et al. (2017) find that overtourism is caused by a variety of different factors, such as the international expansion in tourism, more aggressive marketing of destinations and the transformation of tourists' preferences.

All sources of light (e.g., sunlight, light bulbs and fluorescent tubes) emit certain types of radiation, the most important forms of which are infrared and ultraviolet (UV) radiation. Light and UV radiation initiate photochemical reactions on substances, which has the potential to cause the greatest amount of damage within museums or galleries. While infrared radiation is associated with reduced levels of energy compared with visible light and UV radiation, it can serve as a catalyst that accelerates the progression of chemical modifications. This can, as a result, worsen the destruction caused to organic substances (Parks Canada, 2003). The Standards and Guidelines for the Conservation of Historic Places (2010) advocate for sensible conservation efforts to be made to ensure that historic sites are protected. They offer a philosophical perspective on conservation tasks, outlining principles that draw on the combined knowledge that has been gathered through experience of conserving heritage. This knowledge is founded on theoretical and practical debates that have developed in line with the evolution of conservation practices.

There are several general criteria for reducing the progression light-related damage on historic sites. For instance, the Culture and Diversity Council in Europe have assembled the "Guidelines on Cultural Heritage Technical Tools for Heritage Conservation and Management" (2012), introducing the general criteria for reducing damage caused by lighting in historic sites. These criteria include certain recommendations, such as limiting exposure of items to light when appropriate and ensuring that light is not excessively bright in close proximity to the historic item in question. Removing UV radiation (through the use of UV absorbent filtration systems) is another action that can be taken. When an exhibit contains objects that are susceptible to light damage, it is recommended that such items be displayed in the same location with suitably reduced levels of light. These objects should only be displayed on a temporary basis,

and objects on display should be rotated to ensure that their yearly exposure to light is minimised. Furthermore, cases, vitrines, cabinets and other display containers should be kept at a certain distance from sources of light to limit the accumulation of heated local environments.

Zakaria and Bahauddin (2015) also make reference to the "Guidelines for the Conservation Areas and Heritage Buildings," according to which document the lighting of heritage properties should be implemented in a careful manner to prevent installations from causing damage and negatively impacting aesthetics. These guidelines also make clear that the practice of making holes in walls for electrical sockets and the installation of light fixtures can result in damage to heritage properties and should therefore be limited. Furthermore, if lights are situated in close proximity to structures, this can cause the accumulation of potentially damaging heat, and so this must be taken into account. In addition, lighting would conventionally have been positioned around the entrance on the ground floor, on the five-foot pathways of shops or houses, or on the porches of bungalows. It also points to the fact that lighting that comprises multiple colours, regardless of whether it is static or dynamic, should be avoided.

4.4   Summary and Conclusion

This chapter pointed to the value of historic sites, which explains the importance of developing these urban spaces within cities. After considering the various benefits associated with the promotion of historic sites - with such benefits extending across social, economic, public-value-related, educational and cultural realms - this chapter also considered the development of the UNESCO World Heritage Site scheme. Although some studies take the view there are drawbacks associated with this scheme, it is clear that the associated advantages are significant in terms of the benefits to individual sites and their host cities. Studying the relevant literature was used to understand the aspects that must be considered and those that should be prevented when designing lighting for historic sites. It should be noted that while these regulations are set for World Heritage sites, they could be considered in other historic sites to protect and maintain their values as well.

Accordingly, this chapter then presents the two critical criteria that any site must meet to be included as a World Heritage Site, namely integrity and authenticity. It is of note that, while integrity was seen to be defined in terms of the initial versions of the guidelines and seems a relatively straightforward matter, authenticity is a more complicated matter to define and evaluate. As the literature makes clear, integrity requires that all the important components of historic sites be intact and undamaged. Authenticity, on the other hand, includes tangible (form, setting, techniques) and intangible (function, use, tradition, spirit) parameters, defined in terms such as "truthfully, genuinely and credibly, expressed by the attributes carrying the values." Due to the intangible nature of some of the parameters of authenticity, judging whether a property or site is authentic is far from straightforward. In such cases, it is difficult to evaluate questions of authenticity when new design elements, particularly lighting features, are added to the site. A question therefore arises regarding the extent to which the authenticity of a heritage site can be considered when lighting features are to be added. The literature also makes clear that, when a historic site is used in the modern world, in some cases differently to the original intention, there is a requirement to consider whether the site is (still) authentic.

This chapter then studied the history of lighting in historic sites. Through this literature review, it emerged that it is possible to get a sense of how lighting has gradually moved from serving as a purely-functional tool for providing accessibility, safety and visibility to an influential feature within the urban space, giving rise to economic benefits and positively influencing even social and emotional components of everyday life. What is especially interesting is that lighting was previously regarded as a tool used in furtherance of functional interests, but over time, has come to be treated as a design feature with its own values and potentials, not only to illustrate and support the historical site, but also to create specific atmospheres selected by those designing lighting apparatuses.

This chapter then studied the secondary research in regard to how historic places have significant potential for evening entertainment and social gatherings. Accordingly it was found that when historic sites are suitably illuminated, people will be motivated to visit such spaces at night, allowing these spaces to gain a new lease of life as important

venues for high-quality evening experiences. The literature was found to make it clear, however, that purely functional street lighting will not serve as an appropriate or effective means of highlighting the cultural aspects of such sites, and is, in this respect, inadequate.

Then this chapter focused on lighting being used as a tool for placemaking, providing an opportunity to replace landmarks and serve as an educational palette for observers. Then, the literature was also found to make it clear how lighting design can highlight aspects of the historic site in different ways. Not only do lighting designers craft the lighting scheme as a means of providing illumination, but they also have the potential to play the role of an interpreter for the lighting scheme. The literature highlights the importance of using lighting to convey interpretations as a means of educating visitors on the importance of the historic site. In this regard, they largely rely on people's knowledge of the site, such that, when people are knowledgeable about the importance and history of the site, there is a reduced call for such interpretation. If this is not the case, however, it is incumbent upon the designer to gain a sense of the visitors' level of knowledge before engaging in the design process. In the event that it is the case both that the designer highlights certain aspects of the history of the site and the visitors to the site have a degree of related knowledge, it may be considered that this presents an opportunity to engage in deeper levels of education regarding the history of the site. It is unclear, however, whether the lighting designer is the ideal individual to convey his or her own interpretation of the site through lighting design, especially having regard to the potential for bias to be introduced regarding what is to be emphasised through the lighting setup.

This chapter then focused on the literature on how lighting can result in attracting attention to historic sites at night. It found that historic sites can vanish in the dark at night-time, but, if they have an appropriate lighting scheme, they can capture people's attention and serve as an attractive spot to visit. Given people's reduced work-related responsibilities in the evening, such spaces can serve as a destination for people to meet, socialise and gather with family and friends. This can only happen if a lighting scheme can initially light up the site, and this is done in a way so as to attract attention.

This chapter then studied the secondary research on the effects of lighting historic sites on tourism. The literature reveals that historic sites are one of the main tourist destinations worldwide. So the chapter presented the debates on whether being listed as a World Heritage Site results in increased tourist-based attention, while explaining that there is agreement that what definitely does attract more tourism to a historic site is not that it is merely historic, but also the unique features that the historic site includes. Some of these relate to the cultural or natural components of the sites, while other aspects relate to how the elements within the site arouse certain emotions, together with the atmosphere of the site itself. Although the historic site plays a vital role in promoting positive feelings and attracting people, especially during night-time, other added elements to the site have been found to play a part in attracting tourism. Lighting, as one of the important and essential features of historic sites, has been found to be highly effective. At this point, a question arises: while the literature reveals that lighting is important in attracting tourism to historic sites, does it have the potential to discourage people from visiting the site during night-time if it is not appropriately designed?

While lighting is considered an important element for historic sites and the many opportunities that it can provide for these urban spaces have been considered, lighting may also require to be handled with care within the context of such sites. So, this chapter finally presents some of the major issues relate to light pollution and the associated negative effects on environmental health and animal behaviours; other aspects relate to overtourism and even the damage that light and lighting installations may cause to the historic sites. These aspects need to be considered such that these dangers can be prevented or at least mitigated. Furthermore, the regulations that are set for installing lighting features must be considered in the context of all design processes to prevent damage to historic sites.

Gap in Knowledge

The three above chapters focused on the dependant and independent variables associated with this research. Chapter Two explored the concepts of place and placemaking and while it presented the importance of placemaking aspects in urban design, it also referred to how placelessness can influence the society in a negative

manner. Then in chapter Three, lighting is introduced as a potential feature in urban spaces to facilitate placemaking. So, the different aspects of lighting in urban spaces are studied through the secondary research. The importance and effectiveness of lighting in public spaces is counted and the different approaches of using lighting in urban spaces and people's lives is explored. After this, chapter four focuses specifically on historic sites and the relation of these urban spaces with lighting design, as they are introduced as vital urban spaces which can result to placemaking in urban spaces. The above findings from the secondary research reveal some of the important points to consider within this research. Reviewing these aspects highlights what needs to be borne in mind when considering different cases of historic site lighting. It is now necessary to formulate the position of the present research on how to collect data to gain knowledge on the specific lighting features.

Despite the importance of the lighting of historic spaces and the various benefits which are found to influence these spaces, there is a clear gap in knowledge in relation to how to use lighting design in historic sites for placemaking. While it is found through the literature that lighting can play an effective role in the urban spaces, there is an absence of research on parameters that should be considered as part of the placemaking process in relation to the use of lighting in historic spaces. Accordingly, the present research aims to address this gap by introducing lighting design principals for historic sites within the context of placemaking, as well as investigation of the important placemaking parameters that need to be considered in relation to lighting design projects for these sites. The next chapter will present the research methodologies to design the primary research in order to respond to this gap in knowledge.

Chapter Five: Research Design and Methods

5.1   Introduction

The research this thesis described is necessarily interdisciplinary; it situates lighting design in relation to placemaking and by default makes wider connections to anthropology, urbanism and geography. In order to address the research question pertaining to **the design principles for lighting historic sites within the placemaking process,** three main disciplines have been considered in the preceding chapters. These include the independent variables, namely i) the concepts of space, place and placemaking; ii) the notable features of World Heritage Sites; and the dependent variable, namely iii) the quality of lighting.

In order to capture data relevant to both placemaking and lighting design in historic environments, there is a requirement for the research methods to shed light on specific aspects of historic sites and the people who make use of them, together with the quality of the light within these sites. The methodology this chapter describes was devised in response to the need to capture site-specific data that was both rich in relation to lived experience, and detailed in relation to placemaking processes and stakeholder views.

This chapter starts by justifying the choice of inductive research approach for this research. It then introduces the research strategy describing the overview plan to respond to the research question. Then, the qualitative research method is describes by justifying why it was chosen as the convenient method for this research and then the research design is presented. Accordingly, case study and ethnographic research and techniques which include observation, interviews and questionnaires are introduced. The details of positioning in an observation, sampling methods and the questions' design process are all justified after this section. Finally, the chapter is rounded by presenting a section on how the data was managed and stored.

5.2   Research approach

Babbie (2010) argues that research approaches are the paths to the creation of social theories and that a research approach is either deductive or inductive. A deductive research approach is the action of assessing objective theories to understand the correlation amongst different variables, which are measurable by means of various

tools. The procedure often engages a systematic analysis of numerical data (Creswell, 2013). In this approach, the data are more generalised and less subject to bias, and the findings may be replicated (Goddard and Melville, 2004).

An inductive research approach involves finding patterns in relation to a specific topic (Bernard 2011). This process is developed through building interpretations of the data after studying and identifying the behaviours of people within a flexible structure (Creswell 2013). Through an inductive approach, experimental generalisations and preliminary links are first established by the researcher, following which they are expanded and refined in order to facilitate more abstract consideration of the objects of study (Neuman, 2004). As there is little to no existing literature on a topic, it is common to perform inductive research because there is no theory to test, thus this approach is based on the observations of the researcher, with theories being formulated as the research progresses (Goddard and Melville, 2004).

In the context of the present research, there were no available frameworks for the lighting of historic sites through placemaking and there was very little literature related to the topic, so there was no theory to be assessed as in a deductive approach. In fact, that is what this research aims for which is to **developing lighting design principals for historic sites through the placemaking process**. There is therefore a need to find these new patterns rather than testing an available pattern. As Creswell (2013) describes, this needs to be done through building interpretations by identifying people's behaviours, which in this research is done through studying people's behaviours within historical sites. This research therefore uses an inductive approach, establishing primary links based on the case studies and ethnography research which includes observations of people's behaviours and interviews from three relevant groups who are the visitors of the historic site, the lighting designers and the heritage experts. Then, by identifying and studying the findings, the results can be expended in order to establish a series of appropriate patterns and theories that can be reformulated as principles for designing lighting schemes for historic sites through placemaking.

5.3   Research strategy

A research strategy introduces an overview of how the research project is organised (Johannesson and Perjons 2014). It initially needs to consider how to answer the research questions and reach the research aims. It also needs to consider the feasibility of the project as a whole and the matter of gaining access to the data within the timescale of the project (Johannesson and Perjons, 2014). For reaching the aims of the current research considering accessibility and feasibility, the following phases and steps were taken (Figure 5-1):

Phase 1: Secondary Research

To study and identify the dependant and independent variables:

Dependant variable: The quality of lighting

Independent variables:

1. The concepts of space and place and placemaking
2. The considerable aspects of World Heritage Sites

Phase 2: Primary Research

Semi-structured Interview: lighting designers

Best Practice Case Study: Saint-Avit-Sénieur in France

Behaviour Observation, Questionnaire, and Interview: Visitors in the historic site

Second Case Study: Naghshe Jahan Square, Iran

Behaviour Observation and Semi-structured Interview: Visitors in the historic site

Semi-structured Interview: Heritage Experts

Phase 3: Analysis

Qualitative Data Analysis: Thematic Analysis

Findings

Figure 5-1: Research phases

5.4   Research method

As Goddard and Melville (2004) and Creswell (2013) outline, research methods are either quantitative or qualitative. Allwood (2012) builds on this distinction, arguing that there is a more sophisticated view of methods that goes beyond this dichotomy.

Any phenomenon has both qualitative and a quantitative aspects in the sense that it can be categorised and that it has some degree of 'much-ness' (Sandelowski et al. 2009). The identity of any phenomenon (including attributes and components) is qualitative, but there is likely to also be a quantitative aspect (how much of the given feature can be measured). So, although it is found that every phenomenon has both qualitative and quantitative aspects, the researcher may choose to use one of the two methods based on the research question constituting the focus of the study.

Quantitative research methods are used for research subjects and data that are handled in a statistically-driven manner and are objective, scientific and often elicited through the use of experiments (Kotler, 2012). The process involves some sort of assessment of the data, and delivers theories that are based on numerical models and statistical data (Bryman 2015). Using this research method, the researcher can engage in research that is concerned with a wide population (Allen, 2017; DeFranzo, 2011).

Qualitative methods, on the other hand, are designed to capture subjective, humanistic and interpretive methods (Kotler, 2012). Qualitative methods are often used within the context of research on people's emotions, feelings and behaviours, as well as social activities, cultural studies and interactions between different nations (Corbin and Strauss, 2014; DeFranzo, 2011). Through this approach, it is possible to gain information on the details of the emotional and behavioural aspects of individuals, with such insights often being difficult to understand through quantitative methods (Corbin and Strauss, 2014). This research method is an appropriate choice for research that accesses a small sample size, albeit there is a disadvantage in that it is not appropriate for use with larger populations (DeFranzo, 2011)

To document how people interact with and feel about their experiences in historic sites, the qualitative research method stands out as the more suitable and effective method in terms of its dealing with subjective topic of the lighting of historic sites. As noted previously, quantitative research methods are objective and typically not appropriate for understanding interpretative subjects (Corbin and Strauss, 2014). Thus, although lighting does include quantitative characteristics, the focus of this research is only on the qualitative aspects that need to be considered in the historic sites through placemaking.

5.5 Research design

The research design of a project typically comprises "a detailed outline of how an investigation will take place, including how data is to be collected, what instruments will be used and the means of analysing the data" (Creswell, 1994, pp.1). A research design is therefore a plan for the research addressing the matter of how to answer the research questions (What are the design principles for lighting historic sites in the placemaking process?) formulated at the outset of the project. For the present research, case study and ethnographic research were found to be appropriate methods, as described below.

5.5.1 Case study research design

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" (Gerring, 2004). He also states that "a 'population' is comprised of a 'sample' (studied cases), as well as unstudied cases. A sample is comprised of several 'units,' and each unit is observed at discrete points in time, comprising 'cases.' A case is comprised of several relevant dimensions ('variables'), each of which is built upon an "observation" or 'observations.'" A case study is therefore an in-depth study of specific research problems, usually used to narrow down a very large field of research into one or a few easily researchable samples (Shuttleworth, 2011; Anastas, 1999; Stake,1995).

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 and Stanley, 2015). According to Shuttleworth (2011), 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. It can be used in conjunction with other sources to investigate a research problem. As Shuttleworth (2011) explains, this research design cannot be hypothesised to reach the answers for the whole research question and can only provide results for one specific sample: the findings from case studies are case specific. However, 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.

Case study research design was chosen for this research as a means of studying site-specific cases of world heritage sites with lighting design features with a view to learning from the existing samples. Studying the existing examples helped 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 behaviours that contributed to enhancing the sense of place. Adopting the case study research design also helped with gaining valuable feedback from users. Accordingly, two different case studies, namely Saint-Avit-Sénieur in France and Naghshe-Jahan-Square in Iran, were chosen, first to collect data from each example, and second, to compare the data and the feedback collected in each case study.

Campbell and Stanley (2015) argue that case study research design offers information about a case or a small number of cases in such a way that the findings cannot be generalised to the wider population. It follows from this that inference regarding wider assessment of cause and effect relationships is precluded. Shuttleworth (2011) highlights the ways in which case study research provides a means of gaining insight into certain real-life circumstances, albeit he too concedes that the results obtained cannot be generalised to a whole population. Campbell and Stanley (2015) suggest that, given these limitations, case studies are best used when supplemented by results obtained using other methods of enquiry.

5.5.2   Ethnographic research

Ethnography is of significant value in the field of design (Murphy and Marcus, 2013). Brewwer (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 the externally." Burgess (1982) defines ethnography as "the study of real-life situations," and continues as follows: field researchers […] observe people in the settings in which they live and participate in their day-to-day activities. The methods that can be used in these studies are unstructured, flexible and open ended."

Low (2016, 1981) explains how some data collection methods that originated within social science are beneficial when deployed within the context of architectural and design studies. She refers to ethnography as one of the most useful methods in design research. Aktinson and Hammersley (1998) provide several relevant features of ethnography. They take the view that ethnography can shed light on people's day-to-day behaviours within the real-life environment instead of unnatural experimental settings. The data collection process is unstructured and flexible, which results in findings that are not pre-arranged. Ethnographic research focuses on a small scale of participants within a single setting, and the analysis of the data engages attributes of the meanings of people's behaviours, which can subsequently be explained.

Fine (2003) uses the term 'peopled ethnography' to define text that provides insight into the setting and the theoretical implications based on field notes emerging from observations, interviews, and analysis of the group members. He believes that ethnography is most efficient when the researcher observes the people within settings such that this results in an understanding of the behaviours. This research therefore stands to benefit from drawing on the findings of observation and interviews so as to shed light on individuals' behaviour as it relates to the lighting scheme of each of the two case study sites.

Taplin et. al (2002) use ethnographic methods to study a heritage park and its relation to the cultural aspects of the people living nearby. Low (2016), in her book *Spatializing culture: The Ethnography of Space and Place* defines how ethnographic methods are suitable for interdisciplinary research in the fields of urban design and sociology, presenting many different studies that have used ethnographic methods to understand the uses of urban spaces and how certain spatial features influence people's behaviours and activities. Shortell and Brown (2016) also include relevant coverage of related studies in their book *Walking in the European city: Quotidian Mobility and Urban Ethnography*, considering four cases within urban design that they regard as having successfully used ethnographic methods.

This research eventually aims to propose lighting design recommendations for historic sites through placemaking. Based on Fine's (2003) term of 'peopled ethnography', ethnography is chosen because it is most efficient being based on interacting with

groups of people through observation which provides a setting that the researcher can study the routines of behaviour. So, ethnography is a useful method for gathering data about people's day-to-day lived experiences and real-life environment. As Verloo (2021) explains, ethnography provides the setting to learn about the environment by engaging in the various perspectives and experiences of the people within it. Reflecting on the literature with link to the first objective of this research which is to understand and identify people's experiences, engagements, and opinions in relation to the lighting in the historic sites, ethnography is particularly useful. Various research such as the chapters presented in the *Walking in the European city: quotidian mobility and urban ethnography* by Shortell and Brown (2016) present how different studies have used ethnography in case study research within urban spaces. Accordingly, this research studies two case study cities as presented in section 5.4.1, which provide site-specific focus for the primary research; behaviours, activities and opinions in each of these settings. Ethnography, as described in the literature, is chosen as a significant method to focus on a small scale of participants within a real-life setting, and the data gathered through this method can build a good understanding of the meanings of people's behaviours

Through participant observation within each of the two distinct settings, this research stands to benefit from drawing on the findings of observation and interviews so as to shed light on peopled ethnography as it relates to the lighting scheme of each of the two case study sites. Accordingly, both case studies of Saint-Avit-Sénieur in France and Naghshe-Jahan-Square in Iran were studied to understand how the lighting of the site functions as an influential factor on visitors' behaviours and social interactions such that this results in the feeling of a sense of place. Three ethnography methods of observation, interview and questionnaire were used to gain a broad understanding of people's behaviours within the chosen historic sites.

5.5.2.1   Observation

Different data collection techniques are used in ethnography, but Aktinson and Hammersley (1998) isolate observation as one of the main methods that can be used. Observation helps gain an understanding of people's behaviours within different settings (Bechtel and Zeisel, 1987). Marshall and Rossman (2014, p.79) define observation as "the systematic description of events, behaviours, and artefacts in the

social setting chosen for study." 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 behaviours. Observation can also provide guidelines for further interviews with the participants within the setting (Dewalt and Dewalt, 2002).

Schensul, Schensul, and Lecompte (1999, p.91) define participant observation as "the process of learning through exposure to or involvement in the day-to-day or routine activities of participants in the researcher setting." Observation was therefore used as part of the data collection techniques for this research, as the research required to gain an understanding of people's behaviours within the chosen heritage sites. It also required to consider how the site's lighting features influence people's behavioural and social activities in relation to the sense of place. Through observation, it was possible to identify how the lighting within each case study influenced people's social behaviours.

One of the benefits of collecting data on people's behaviour through observation as compared with other techniques (e.g. surveys) is that, in observation, the researcher can observe the behaviours directly rather than listening to "reported" behaviours on the part of the participants. There may therefore be many hidden aspects that the participants may not refer to when responding to surveys. Similarly, they may engage in dishonesty in their responses in surveys. In this regard, observation is more reliable (Vidich and Shapiro, 1955).

Bernard (1994) also counts several reasons as to why collecting observational data increases the validity of studies, with his observations making clear the appropriateness of this tool for the present research. Firstly, this data collection process provides different types of data and familiarises the researcher with the setting and community, providing useful data regarding the sensitive activities and behaviours about which the researcher would struggle to learn through the usual resources of journals and books. Secondly, people tend to act more naturally in observational settings, and 'reactivity' is reduced when there is reduced awareness of their being studied and observed. Thirdly, this method facilitates the researcher's gaining a better cultural understanding, lending increased authority to his or her

interpretation of what is observed. Fourthly, this understanding of the culture and the languages of the people serve to assist with developing informed questions that make sense to the people in subsequent stages of data collection, such as interviews. Finally, it is often the case that, in some studies, observation is the only means by which to collect data. Given the persuasiveness of this appraisal of this method by Bernard, observation was selected as a method of enquiry within the context of the present research.

As this research is situated within the field of design and is concerned with how lighting design features play a part in historic sites and placemaking, observation was chosen for use in collecting data. Rosenbaum (2010) and Williams (2008) explain that an observation is useful for providing an understanding of a given phenomenon, all while avoiding the practical and ethical difficulties associated with setting up a large research project. They add that it is a flexible data collection method and does not require a fixed structure around a hypothesis of what is expected to be observed, with the data evolving during the research process. This is an especially beneficial aspect as the findings could be gleaned from the observations rather than artificially-formulated hypotheses.

Each of the two case studies made use of behaviour observation with a view to developing an understanding of people's behaviours within the historical sites. This helped gain a solid understanding of the existing lighting scheme and how this influences people's connection with the site. The behaviour observation provided information about the interaction among people and with their physical environment, as well as helping to provide an understanding the pattern of their behaviour within the site.

Positionality and observational approach

Merriam (1988) provides guidelines regarding carrying out observations, emphasising the data that need to be recorded as field notes. These include the physical setting, people, the behaviours and activities of said people, and the duration and frequency of involvement in the behaviours and activities. These aspects were noted within the observation process of this study and are presented in the description of the findings. It is possible for a researcher in this context to conduct the observation as a secret

outsider, a marginal participant observer, a full participant observer or a recognised outsider. As a secret outsider, the observer will not be visible to the participants (Zeisel, 2006). Although this does present certain advantages, the observer may miss out on many of the detailed behaviours and words used, typically observing from a distance.

This research sought to gain a closer look at people's social and interactive behaviours amongst themselves and with the site. Within the context of this study, I participated as a marginal participant, wherein I was able to merge into the research field and make it less likely that the local people were aware they were being observed (Zeisel, 2006), walking in the historic site or sitting in the corner as with other visitors. In Isfahan, my access to conversation and cultural codes was more pronounced. For example, Naghshe-Jahan-Square is usually very crowded during the evening when it is dark, and it was possible to see and even hear closely what the people within the site were engaged in, how they interacted and how they used the facilities within the setting closely. It was beneficial to engage as a marginal participant observer such that I engaged in minimal activities with other visitors (e.g. picnicking). After conducting the observation, in certain cases, I approached the individuals who had been observed in order to interview them provided they were willing to participate. At this point, after the observation procedure had already taken place, the participant obviously became aware of their status as a research participant. In each of the case study sites, I developed what Anrosino and dePerez (2000) refer to as 'focused observation,' supporting the observational data through interviews. Through this process, the data collected from the interviews provided information on perceptions as a guide to decide what to observe. I also undertook what the authors refer to as 'selective observation,' which helped to define the differences between different forms of data sources (Angrosino and dePerez, 2000).

5.5.2.2   Semi-structured interviews

Interviews are qualitative data collection methods that involve extensive discussion with individuals in pursuit of a deep understanding on a particular subject (Brinkmann, 2008; Barbour and Schostak, 2005; Gillian and Catherine, 2004). Barbour and Schostak (2005) explain that, in this data collection process, the relationship between the phenomena and its meanings are understood on the basis of the participants' free and

flexible answers. Dörnyei and Skehan (2003) state that interviews have two advantages, which are the flow in data collection, and the details the participants provide in their spontaneous answers about their personal perceptions and experiences of the topic.

Dudovskiy (2018) does note one disadvantage with this data collection method, which is the long-time frame that is needed to collect data from the participants, together with, in some cases the difficulties relating to arranging interview sessions with some interviewees. Due to flow in data collection and spontaneous answers that people give about their experiences and feelings, and level of detailed data collected through interviews, this method was considered an appropriate method to collect data from all groups of relevant people within the context of this research.

Dudovskiy (2018) explains that there are three types of interviews: structured, semi-structured and unstructured. Structured interviews involve the interviewer asking all the participants the same prearranged questions in the same order. This format makes the analysis process easier as the answer to each question can be compared across the different interviews. Unstructured interviews, by contrast, are conducted in a manner such that the researcher has no planned questions. Analysing the data from this type of interview is more difficult as the answers may not be comparable as a result of the questions asked being different or differently formulated, yielding different understandings of the topic. Finally, there is the semi-structured interview, which includes features of both un-structured and structured interviews. Some certain questions are designed before the interview to clarify and stimulate in-depth discussion in relation to the topic. However, they are asked more loosely to give the interviewee the chance to express his or her own ideas and perceptions (Dudovskiy, 2018). Brinkmann (2008) takes the view that semi-structured interviews allow the researcher to design the interview ahead of time and allow the interviewees significant freedom in responding to the questions, producing valuable data. Accordingly, for this research, semi-structured interviews were used.

Dudovsky (2018) argues that it is important to make sure the interviewing process is non-threatening and framed as a friendly discussion, allowing the interviewees to outline their perceptions freely. In addition, the interviewer must ensure that they

avoid expressing any of his or her own opinions, whether these are similar to those of the interviewee or not. In this way, the answers are not directed in a certain way, but are offered freely in whichever direction the interviewee sees fit.

This research used interview data collection methods across four different stages. Firstly, interviews with eight Lighting Designers were organised to gain their opinions on the lighting of urban historical spaces and how lighting in these spaces can result in sense of place amongst visitors. Sturges and Hanrahan (2004) believe that there are no differences amongst the different methods of contacting the interviewee and that using communication methods through media such as video-calls can give the researcher the chance to connect to people from all over the world. Accordingly, eight of the interviews with the lighting designers and heritage experts to whom the researcher had access to were held face to face; four other interviews with lighting designers were conducted using video-calls. The interviews were conducted such that there was a focus on the designers' approaches to and opinions on the topic. The semi-structured format also allowed them to offer further opinions on what they thought may be relevant to the study. The findings from these interviews not only provided a solid understanding of what characteristics these designers believed should be considered in historical sites, but also made evident that there is a gap in knowledge about how lighting in these environments can result in a sense of place. This resulted in further in-depth study regarding the concepts of space and place and guided this research in terms of the direction it took.

The second and third set of interviews were held at the same time as the behaviour observations in the two case studies in Saint-Avit-Sénieur and Naghshe-Jahan-Square, with the visitors to the historic site. Interviews with the visitors helped provide a more precise understanding of how 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. After people's behaviours and activities were observed within the site, they were approached for interviews with a view to gaining their freely-offered opinions and insights on the functionality of the site, their usual activities and specifically their perceptions and thoughts about the different lighting features within the site and how these facilitate these activities and how it

makes them feel, all framed against the sense of place specified within the interview questions. These interviews were also held in a semi-structured format, with I as the interviewing having certain questions in mind but all the while leaving open space for the interviewers to express their personal opinions and feelings as freely as possible. As a result of my seeking to make the interviews as unthreatening and friendly as possible, on many occasions in Naghshe-Jahan-Square, I was invited to join in with family gatherings and picnics. People in France were also interviewed when they were able to communicate in English, but, as many of the visitors were and had very little or no fluency in in English, this method was not as efficient in all cases.

The fourth interviews were organised with four heritage site experts in relation to historical sites and cultural heritages. Through these interviews, the researcher gained an understanding of what limitations and aspects of design are considered for the lighting of historic sites, or, in terms of Naghshe-Jahan-Square, what has constituted the focus of the existing lighting scheme and whether there are future plans for improvement. Table 5-1 presents the participant group information.

Table 5-1 Participant Information

Participant Groups	Number of Participants	Code for Quotations
Lighting Designers	8	LD+number
Heritage Experts	4	HE+number
People visiting Naghshe Jahan Square, Iran	30	People IR
People visiting Saint Avit Senieur	26	People FR

Interviews with visitors provided a more precise understanding of how 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. In the best practice case study, as the native language of the majority of the visitors was French, conducting a questionnaire in French, which reduced the level of verbal communication required, was used in conjunction with the interviews, providing a

smoother means of interaction. Only those visitors who were able to speak English were therefore interviewed verbally. The remainder of the visitors were given a questionnaire in French so that they could express their thoughts in their native language. This was then translated into English for consideration alongside the rest of the data obtained for this research.

5.5.2.3   Questionnaire

A questionnaire is a research instrument that includes a series of questions formulated with the aim of gathering data from participants. This method of data collection was first designed by the Statistical Society of London in 1838 (Gault, 1907). Oppenheim (2000) explains that questionnaires present objective ways of gaining data regarding the knowledge, beliefs, attitudes and behaviours of participants. This data collection method can be used as the sole data collection method, or together with other instruments (Oppenheim, 2000).

In the best practice site, Saint-Avit-Sénieur, together with the behaviour observation and interviews conducted, questionnaires were distributed to several visitors. The reason for using questionnaires instead or along the interviews in this site was rooted in the fact that many of the visitors' native language was French rather than English. This meant that the only method that I could use to gain some of their thoughts and feelings about the site's lighting was through pre-designed and written questions in this language.

These questionnaires were therefore initially designed in English and subsequently translated into French, as the native language of the local people. Post-observation, people were approached and asked to fill in the questionnaire. It was clear that this method was not the most appropriate way to gain insight into people's feelings and emotions within the site. However, given the language restrictions, valuable data could be gained along with the observations and some of the interviews on this site.

5.4.4   Sampling Participants

Proctor (2003) explains that due to the large populations in research, sampling techniques are used to obtain samples taken from larger groups. Accordingly, sampling is the process of selecting a portion of participants to represent the whole population to reach a more comprehensive analysis (Hejazi, 2006). Sampling is performed either

probability or nonprobability (Naderifar, et al 2017). In probability sampling, each sample has a chance to be selected and the researcher's opinion does not affect the selection of participant samples. In this method, while the selected sample is a representative of the population, the findings are generalised to the whole population. On the other hand, in nonprobability methods, samples are selected in a non-random manner by the researcher, so not each population member has an equal chance to participate in the study (Naderifar, et al 2017).

This research uses both sampling methods for the different part of data collections. Accordingly, random sampling which is a probability sampling method is used in both case studies in approaching people visiting the sites. In random sampling each member of population is likely to be chosen as part of the sample equally. According to Gravetter and Forzano (2011), random sampling removes bias from the selection procedure and result in a representative sample. This method of sampling was convenient for interviewing and distribution questionnaires amongst visitors of the two sites, especially because there was a big population, and a non-bias selection was most important. Also with random sampling, the results could be generalised to the wider population. Accordingly, samples were approached randomly amongst all people in both sites. These included samples from men and women, people visiting with families, friends, children or elderly, tourists or locals and visitors of shopkeepers.

For the interviews with lighting designers and heritage experts, snowball sampling which is a nonprobability sampling method was used as a convenience method. According to Burns and Grove (1993) this method is applied when the existing study subjects recruit future subjects among their acquaintances. In this method, As stated by Polit-O'Hara and Beck (2006), the researcher asks the first few samples, who are usually selected via through their experiences, if they know anyone with relevant knowledge to take part in the research. Accordingly, the first few lighting designers were chosen based on their work experience and profile of relevant work. through the interviews, they were asked to introduce other lighting designers who they knew of having similar experience or relevant knowledge in relation to the research topic. This method is advantageous as it is less time consuming, but also provides better opportunity to communicate with the samples, as they are acquaintances of the first

sample who is linked to the researcher. Generally, snowball sampling is a gradual process, and time influences the selection of samples (Polit-O'Hara and Beck 2006).

5.4.5 Interview and Questionnaire Design Process

Two main sets of questions were designed for collecting data. The first set was designed for lighting designers and heritage experts while the second set was designed for members of the public approached at the two case study sites. Accordingly, one of the research objectives which is to identify and document relevant experiences and opinions of people relating to lighting in historic sites was reached. It should be noted that the questions were for semi-structured interviews so they were used as a guide for the researcher, however the conversation would flexibly flow and other questions may have raised during the interview based on the interviewees feedback. Each question aimed to gain an understanding about one of the three sub-research questions. Accordingly, the following table presents and justifies why each question was asked from the lighting designers and experts:

Table 5-2 design process of questions for lighting designers and heritage experts

Sub Research Questions	Lighting Designers and Heritage Experts
What are the benefits of developing a lighting scheme through the placemaking process in historic sites?	What do you think are the potentials and benefits of lighting in historic sites?
	In designing the lighting of historic sites, which do you think is more important and why; to create a space or to create a place?
	Should the experience at night replicate the daytime experience or should it offer something different? Please explain.
	What do you think should be the priority in lighting for historic sites (Social, cultural, safety etc)?
	Do you think the lighting scheme for historic sites should be different from that for public spaces? Please explain how
	How important is the opinion of the local community and their culture in lighting design? Why?
	Could we, and should we engage people in the lighting design process for such sites?
What aspects of historic sites must be considered to facilitate a successful placemaking process for these sites?	what is the main approach to lighting schemes in historic spaces which makes it difference?
	Does lighting have to represent the historic function of the site as it was used in the past?
	Should anyone apart from the lighting designer involve in the lighting design of a historic site?
	Are you aware of how lighting schemes can be used in historic sites to enhance the environment?

What aspects of lighting must be considered in the placemaking process for historic sites?	Please explain how light can impact on the identity of historic sites? - can you give me an example please?
	- Which characters of light have the potential to change the identity of place?
	- Do you think light can influence the behaviour or mood of people? How?
	Do you believe there is such a thing as bad lighting for historic sites? If yes, please explain
	Do you think it is the role of the lighting scheme in historic sites to work as interpretation?
	Can lighting provide narrative and drama? In other words, can it tell a story or act as a theatre?
Further questions	Is there anything else you would like to add to our discussion which I may not have asked?
	Who else do you think I should interview for this research?

The second set of questions was designed for the questionnaire distributed amongst people in Saint Avit Sénieur in French language, and used to guide the interviews in Naghshe Jahan Square in Persian language. The main objective of these questions was to gain people's opinions about the site they had visited to examine which is facilitating placemaking as described in the literature in a better manner. It also aimed to gather data about their experience in these sites and how the lighting is facilitating their social behaviours and engagement in different activities. Accordingly, the first set of questions asked about how much they visit the site and when the visits mainly take place. This gave an understanding of how much these sites are favourite destinations at night time to understand how important they are as a place at night-time:

THE PARTICIPANT

1. Occupation
2. Age
3. Where do you live in the city? (area)

4. How often do you visit or pass through the site during the day?
   Why do you pass through?

5. How often do you visit or pass through the site at night?
   Why do you pass through?

6. What time of year do you most often pass through or visit the site and why?

7. Do you have any professional involvement in lighting decisions? If yes, please explain what capacity?

The second set of questions was designed based on the aspects of placemaking from the literature, which aimed to examine people's engagement in the design process as an element which results in placemaking. these included:

The design process

1- Did the designers of the lighting ever approach you to gain your opinion for the lighting of the site? (y/n)

2- Would you like the designers to gain your opinion about the lighting of the site? (y/n)

3- Please show which parts of the lighting on the site interests you most of all by numbering the below pictures from one to five (1 most liked and 5 least liked)

4- How successful do you think the lighting scheme is in relation to matching the site's environment?

5- Do you think the lighting contributes to the atmosphere of the site?

6- How does the lighting change the site?

The third set of questions mainly focused on people's opinion about the site, how they feel the lighting has affected the site and whether it has provided them a different experience compared to the day. It also asks about how they think it has encouraged tourism and what aspects it should consider according to their opinion. It also asks about their feeling of safety in the site during the night, and whether the lighting has effected these. These questions are all generated from the aspects found as lighting's important roles or placemaking aspects in historic sites, based on the literature:

The site and its lighting

1. Could you describe the atmosphere of the site during the day?

2. Could you describe the atmosphere of the site at night?

3. Has the lighting on the site encouraged you to visit it more at nights?

4. Do you think the lighting on the site affects the authenticity of the site?
   If yes, please expand on how.

5. Do you think the lighting of the site is designed for a specific gender?

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6.   Do you think the lighting of the site is designed to be appreciated by a specific age?

7.   Do you feel safe in the site? (y/n) how much of this feeling or not feeling safe can be attributed to the lighting?

7-   Has the lighting on the site at night given you a different experience at the site at night compared to the day? (y/n)

8-   How much do you think the lighting installations on the site has encouraged tourists to visit this site? Very much/ Somewhat/ Neutral/ Not much/ Not at all

9-   What aspects of life do you think a lighting scheme should consider when lighting up this site? (culture, politic, religious, social, history, tourism)

The final set of questions focused on lighting characteristics and people's opinions about the aesthetic aspects of the lighting of the site. Accordingly, the following questions were asked:

Aesthetics and lighting

1.   Please show which of the below lightings you like more (please choose one) (cool and warm light examples)

2.   Which colours do you like to be used in the lighting of this site?
Red, blue, white, green, yellow…

3.   Do you like the whole site to be lit up or would you prefer only parts such as columns, windows, walls, entrance, celling, etc of it to be lit?
Whole site

Site's parts (which)

4.   Have you ever read the notes that are projected on the walls? Yes/ no

5.   Can you show which sort of lighting you like to be used to lit up this site by choosing from the below pictures (choose as many as you want)(flood lighting, spot lighting, 3d mapping,…)

6.   Do you think the lighting of the site creates a story? If yes, what do you think the story is?

7.   How much do you think the lighting of this site should have a meaning behind it?
I don't care about the meanings.

I think it should include a deep meaning.

It should be meaningless.

8. How often do you think the lighting of the site should change over time?
   It should change every year.

   It shouldn't change at all.

   It should be changed every….

   If yes, why do you think change is necessary?

9. Do you think lighting is as important as the architecture in this environment?
   If yes, why?

5.6 Validity of findings

According to Leung (2015), in qualitative research validity means "appropriateness" of the tools, processes, and data. Long and Johnson (2000) refer to validity as the integrity and application of the methods used and the precision that the findings accurately reflect the data. Kitto et al (2008) suggest that validity, reliability and generalisability are often not directly applied to qualitative research because of the different frameworks, sampling approaches, sampling size and the aims of qualitative research. As an alternative, they suggest the use of terms such as rigor, referring to the thoroughness and appropriateness of the use of research methods, credibility, dealing with the meaningfulness and well-presented findings, and relevance, referring to the utility of findings, to judge the quality or 'trustworthiness' of a study (Kitto et al, 2008).

Accordingly, rigour research was conducted through the following steps to ensure that validity is met through these methods. Adopting different methods and tools for collecting data (Kuper et al, 2000, Fraser and Greenhalgh, 2001) to help gain different perspectives and more comprehensive findings was an important part of this research. Also, the sample of 30 interviews and 26 questionnaires with visitors over the two case studies as one source of data, combined with 7 lighting designers and 3 heritage experts interviews and a willingness to share their experiences in depth and over time enabled clarification of findings as an ongoing process and ensured Representativeness of the findings in relation to the phenomena. In addition, semi-structured recorded and transcribed interviews with the lighting designers and heritage experts allowed

repeated revisiting of the data to check developing themes and remain true to interviewees interpretations and contributions.

5.7   Thematic analysis

Importantly, the method of analysing data depends on the form of data and whether it is qualitative or quantitative (Neuman, 2004). Qualitative data therefore requires to be analysed in a manner that reflects its intrinsic nature. Neuman (2004) explains that qualitative data are usually expressed through words, actions or images, and so they are analysed in a non-standardised method with the researcher identifying similar patterns through in-depth study into the data and critically analysing these such that they are framed in terms of the aims of the research. Patton (1990) argues that this method of analysis is built on the researcher's critical and creative thinking capabilities. Corbin and Strauss (2014) also argue that the interpretation of the researcher constitutes the basis of analysing qualitative data.

Thematic analysis is a broadly used method of analysing data in qualitative research (Braun and Clarke, 2006) and remains a relatively underappreciated method in comparison with grounded theory, ethnography and phenomenology. Braun and Clarke (2006) argue that thematic analysis should be one of the initial methods for qualitative data, as it provides fundamental skills for conducting numerous other forms of qualitative analysis.

Braun and Clarke (2006) explain that thematic analytic methods can be used widely to respond to a range of research questions. This method is designed to identify, analyse, organise, describe and report on themes that are found within a data set. Boyatzis (1998) describes this as a translator for those speaking the language of qualitative and quantitative analysis, empowering those who use various research methods to connect with other researchers. Thematic analysis is designed such that it comprises six clearly distinct steps that ensure clarity and consistency in the process of analysis: 1) getting familiar with the data; 2) creating primary codes; 3) searching for themes; 4) reviewing the themes; 5) defining the themes and naming them; and 6) putting together the report.

5.6.1 Data Transcription

One of the steps required to be taken to analyse the data in this research was transcribing. Brinkmann (2008) refers to transcribing as the interpretative process whereby the transcriber develops knowledge of the nuances of oral speech, body language and facial expressions, none of which can be directly translated to textual form (Brinkmann, 2008, pp.470-472). Isaac (2015) and Streefkerk (2019) explain that there are two methods of transcribing interviews, these being verbatim transcriptions and intelligent verbatim transcriptions. Verbatim transcription is conducted when the oral speech is transcribed word-for-word, with every aspect of the verbal data being transcribed into text (Poland, 1995). Intelligent verbatim transcriptions, on the other hand, are assembled to textualise oral speech as accurately as possible, making it clear and readable such that it is possible to engage in small changes, such as adding filler words, removing repeated words that do not contribute significant meaning, and correcting grammar in the text such that the original meaning is preserved (Green et. al, 1997; Isaac, 2015; Isaac, 2014).

5.6.2 Data Analysis process

Within this research, qualitative analysis methods were used for all of the data, beginning with transcriptions of all the interviews with the Lighting Designers, Heritage Experts and the visitors to the two sites. Their responses were then analysed using thematic analysis. The findings from Saint-Avit-Sénieur and Naghshe-Jahan-Square were gained through behaviour observation and interviews and questionnaires. Patterns were then established regarding how the lighting schemes for such environments should be approached.

The interviews with the designers were conducted in English and were audio-recorded and transcribed. The interviews with the visitors in Naghshe-Jahan-Square and the two Heritage Experts were conducted in the native language of the interviewees, that being Farsi. In this part of the research, the interviews required to be both translated and transcribed, engaging another level of the researcher's interpretation. For all interviews, the intelligent verbatim approach 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.

The steps taken for analysing the data began with transcribing the interviews with the Lighting Designers. The research questions were formulated such that there would be a focus on how to make sense of place with lighting schemes in historical sites. In addition, the best practice was chosen on the basis of the interviews, and so the next phase was planned to engage in data collection for Saint-Avit-Sénieur. The data collected from this site was then analysed, following which the second case study data collection in Naghshe-Jahan-Square was held. The interviews with the Heritage Experts were also transcribed and, after analysing all the findings from the different phases, the results of the study were collated and presented.

5.6.3 Data Management

The data collected for this research included paper and digital formats. In order to keep the data secure, several issues were considered regarding the use and storage of the data. First of all, there was always up-to-date anti-virus software on the laptop where the data storage, analysis and writing-up was done. Secondly, for the issue of storing the data, all the digital data were kept on two devices. One was an external hard drive that was used as a back-up folder and stored in a personal locker at all times. The second was my personal laptop which is kept at home and has a personal passcode. All the data will be kept for several months after the end of the research for publication purposes; after that they will be destroyed.

Some of the data were in paper format. This included the questionnaires from people in Saint Avit Sénieur on sheets of A4 paper, and the notes made from interviews with people in Naghshe Jahan Square, which were collected in a notebook. In addition, there were some notes made during the observations. All these documents were stored in a personal locker throughout the research, and the data were destroyed when the research was over.

5.8   Summary and Conclusion

This chapter outlined how, in order to respond to the central question of this research - this being "What are the design principles for lighting historic sites in a placemaking process?" - qualitative research methods constituted an appropriate choice. It

therefore justified why an inductive approach was chosen for this research. Accordingly, it presented the different research designs for the primary links and justified reasons of using case studies and ethnographic research. It then explained the choice of using observations of people's behaviours and interviews and questionnaires. Such an approach allows the identification of the appropriate patterns appropriate for formulating guidelines for designing lighting schemes for historic sites through placemaking. this chapter also explained the sampling and design process for the data collection. In finally presented the data analysis by introducing thematic analysis and justifying why this method was convenient for this research, as well as describing the data management process. According to the choices made through the literature and studying different methods, the next chapter introduces the two case studies and the data-collection process utilised in respect of each one.

Chapter Six: Two Case Studies in Historic Site Lighting

6.1   Introduction

The aim of this chapter is to present a detailed exploration of both Saint-Avit-Sénieur and Naghshe-Jahan-Square, the two chosen case studies that structure the research and provide key sites to explore the main research question. The chapter begins by situating the cities in the discursive frame of 'best practice'. Considering a site regarded as demonstrating best practice is important in lighting design, as this allows for understanding to be built up of the influence the lighting scheme has. This, in turn, allows one to contrast and compare this scheme with those of other sites in which the lighting is judged as being less successful. Then, the data collection process is presented. This starts by describing the data collection process from the lighting designers, secondly the data collection process in Saint Avit Senieur as the best practice, thirdly the interviews with the heritage experts, and finally the introduction and data collection process of Naghshe Jahan Square as the second case study.

6.2   Understanding 'best practice'

Bretschneider et al. (2004) define 'best practice' as involving the best example relative to alternatives, with such cases usually having been designed so as to fulfil certain purposeful ends. 'Best practice' is used in diverse ways throughout the literature, being also referred to in terms such as 'good practice' and 'smart practice'. According to Vesely (2011), the most precise definition for such phrases is grounded in the selective study of different examples across various contexts with the aim of obtaining generalisable principles and theories.

According to the "Emerging Best Practices in Knowledge Management" research from the American Productivity & Quality Center (APQC) (1996), 'best practice' is a means of facilitating improvements in research, accomplished by comparing one or more examples with one of the best examples in the field with the philosophy of recognising one's inadequacies and accepting that the other serves as a standard to strive for. This can assist with ascertaining how the best practice has achieved the higher quality of achievements such that a similar approach can then be taken in other endeavours.

'Best practice' offers an additional and external focus to look at what other more successful project have done and the results that have been achieved.

Vesely (2011) explains that, through research informed by 'best practices', several actions can be undertaken. As 'best practices' are compared with other sites, one step is to study the best practice site to understand what has been done and how the results have achieved what makes it a successful example. The other example that is viewed as requiring to be improved is also studied so that the researcher can establish the reasons why it represents an incomplete or unsuccessful example. By comparing the two examples, the researcher isolates what is to be learned from the case of best practice.

For this research, Saint-Avit-Sénieur in France was chosen as the case exemplifying best practice. This site was selected on the grounds that it is an award-winning lighting project installation and was suggested as potentially useful within the context of the interviews held with several of the lighting designers. The site is also recorded as a world heritage site and so information was available from the local government regarding the number of visitors the site had before and after the lighting system was installed. In addition, the lighting project has been installed on a permanent basis, and so it was possible to access the site to gain a deeper insight into the status of the site in relation to what it offers as an example of best practice.

6.3   Case study data-collection process

The table below illustrates each of the primary research data collection stages:

Table 6-1 Primary research data collection stages' information's

Stages	Site	Participants	Data collection Method
1	Different parts of the world	Eight Lighting Designers	Ethnography: Semi-structured Interview
2	Best Practice Case Study: Saint-Avit-Sénieur, France	Visitors: 26 tourists and locals	Ethnography: Observation, Semi-structured Interview, Questionnaire
3	Isfahan, Iran Edinburgh, Scotland UNESCO	Four heritage experts	Ethnography: Semi-structured Interview
4	Case Study: Naghshe Jahan Square, Isfahan-Iran	Visitors: 30 tourists and locals	Ethnography: Observation, Semi-structured Interview

6.3.1   Pre-case study interviews: Lighting Designers

The first stage of the data collection was held with eight lighting designers (henceforth "Lighting Designers"). These semi-structured interviews were held with two Lighting Designers from the lighting design company Speirs + Major in the UK, (LD1, LD2) a Lighting Designer from Malmö in Sweden (LD3), the founder of Night-time Design in USA (LD4), a sociologist with lighting design expertise from London School of Economics and Political Science in the UK (LD5), the founder of KSLD company in the UK (LD6), a Lighting Designer from Quartiers Lumières in France (LD7), and the founder of Franco Associados Lighting Design in Brazil (LD8). The interviews were held over the course of a year and each interview lasted around one hour. As the interviews were semi-structured, some prearranged questions were designed (Appendix A), although further discussions developed during the course of the interview, as is normal in the course of such semi-structured discussions.

6.3.2 Case Study One: Saint-Avit-Sénieur

Saint-Avit-Sénieur in France was introduced by several of the Lighting Designers

interviewed as the best practice in lighting design projects in historical sites.

Figure 06-1: Saint-Avit-Sénieur [6]

Saint-Avit-Sénieur is a commune located in the department of the Dordogne in the

Nouvelle-Aquitaine region of south-western France (Figure 6-1). The most prominent

attribute of the village is the large church dating back to the 11th or 12th century

(Figure 6-2). An abbey was constructed adjacent to this church, and dedicated to the

hermit Avitus, whose death occurred in 570. Both the village and the abbey are named

after Avitus (Figures 6-3 and 6-4). The abbey previously housed canons as well as the

followers of Augustine of Hippo, but is now largely in a ruinous state. The magnitude of

the church (51 x 23 metres) is attributed to the status of the village and its location on

the Way of St. James, one of the routes originating in Vézelay that traverses this

region.

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[6] https://www.alamy.com/stock-photo-france-dordogne-saint-avit-senieur-on-the-camino-de-santiago-listed-98616801.html?pv=1&stamp=2&imageid=F36DD819-47AE-47E1-B551-3AE039FF8387&p=158394&n=0&orientation=0&pn=1&searchtype=0&IsFromSearch=1&srch=foo%3dbar%26s

Figure 6-2: The central yard of the church

Figure 6-3: The ruins of the abbey in the back yard

Figure 6-4:South side

The first church to be constructed on Mount Doriac, the location of the existing church, constitutes an example of Romanesque architecture. It was the destination of numerous pilgrimages as a result of the infamy of Avitus, as well as the position of the village on the Route de Compostella ('Way of St James'). For the purpose of accommodating the influx of pilgrims, a new church with greater magnitude was constructed as a replacement for the existing one around the end of the 11th century and the start of the 12th century. This church was situated on the identical site.

In 1862, the church was officially categorised as a "Monument historique." Restoration of the church was performed by the architect Henri Rapine at the end of the 19th century. In the 1960s, archaeological investigations exposed what is believed to be the remnants of a pagan temple, which comprised tiles resembling those utilised in Roman buildings as well as holes that may have been in place to accommodate pillars. It is possible that the temple pre-dates the church, but it is theorised that it was demolished by an earthquake, which could be the origins of the myth of St Avitus.

The abbey-church has been declared a UNESCO World Heritage site, the fame of which is attributed to the notoriety of St Avitus as well as the many pilgrims who visited the church when travelling along the route of Camino de Santiago. Visitors to the church can benefit from a self-guided signed interpretative trail, which enables them to

discover the hidden features of the abbey. It also provides the opportunity to experience history from the Middle Ages by participating in sculpture and illumination classes.

The office of tourism and culture for the Dordogne department in the Aquitaine region in the South West of France is responsible for Saint-Avit-Sénieur. As the population of the village decreased in recent times, a major renovation project was planned and ultimately implemented in 2014 in order to restore the village and the ruined buildings to encourage the locals to remain. This enabled the real architectural and historic heritage of the place to be displayed to the whole world and the village to gain wider international recognition.[7] Originally constructed in the 11th and 12th centuries, the abbey and church in Saint-Avit-Sénieur were thus able to regain much of their former glory, becoming the focal point of numerous cultural programmes. For the project, they studied several options, which included festivals of wine, music and film, making the abbey more attractive and encouraging locals and tourists to visit. However, it was finally decided to use a lighting design in the historical site on a permanent basis with a view to making night-time activities possible for the residents and visitors all year round. The aim of the project was initially focused on the locals and only subsequently considered tourists. The development of the lighting scheme resulted in economic improvements within the village through the provision of retail shops around the site, as well as many restaurants and rental accommodation.

6.3.2.1 Data-collection process in Saint-Avit-Sénieur
Before visiting the site, given the findings of the interviews and the secondary research, some aspects of experiencing a sense of place and the factors facilitating the practice of placemaking were studied. A questionnaire was therefore designed to survey the visitors or the site. This questionnaire was then translated into French.

The data collection in Saint-Avit-Sénieur included three stages. It began with studying the whole site and the permanent lighting scheme designed for the site as the best practice case study. Secondly, behaviour observation was then conducted with a view to studying people's behaviours and interaction with the lighting of the site as well as

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[7] https://www.northofthedordogne.com/dordogne.php

evaluating how it resulted in social and cultural activities amongst the visitors as part of a placemaking process. In the third stage, the visitors were approached with the questionnaires (and interviewed when they were able to communicate in English), with this process being designed to gain insight into people's perception of the lighting scheme. (The questionnaire is attached in Appendix B.)

6.3.3   Interviews: Heritage Experts

The first interview was held with the manager of Naghshe-Jahan-Square (HE1), who has a background in architectural education and the conservation of cultural and historical objects. Secondly, a professor of architecture who had many years of experience and expertise in the cultural heritage of Isfahan was also approached (HE2). Third, during the UNITWIN conference (2019), an interview was held with a heritage expert from the UNESCO World Heritage Centre in Brussels (HE3). Finally, an architect working at Edinburgh World Heritage in Edinburgh (HE4) was interviewed. All four interviews were held face-to-face. In this research, these four experts are all referred to as "Heritage Experts." (The questions designed in advance to be asked in the context of these interviews are listed in Appendix C).

6.3.4   Case Study Two: Naghshe-Jahan-Square, Isfahan, Iran

Naghshe-Jahan-Square in Iran was chosen 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 a manner informative for the present research.

Naghshe-Jahan-Square ('Image of the World') is an open urban square located in the middle of Isfahan, a city situated on the primary routes traversing from north to south and east to west in the central region of Iran. In terms of size, it is one of the largest urban squares anywhere in the world 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-storey 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 6-5). 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 realisation.
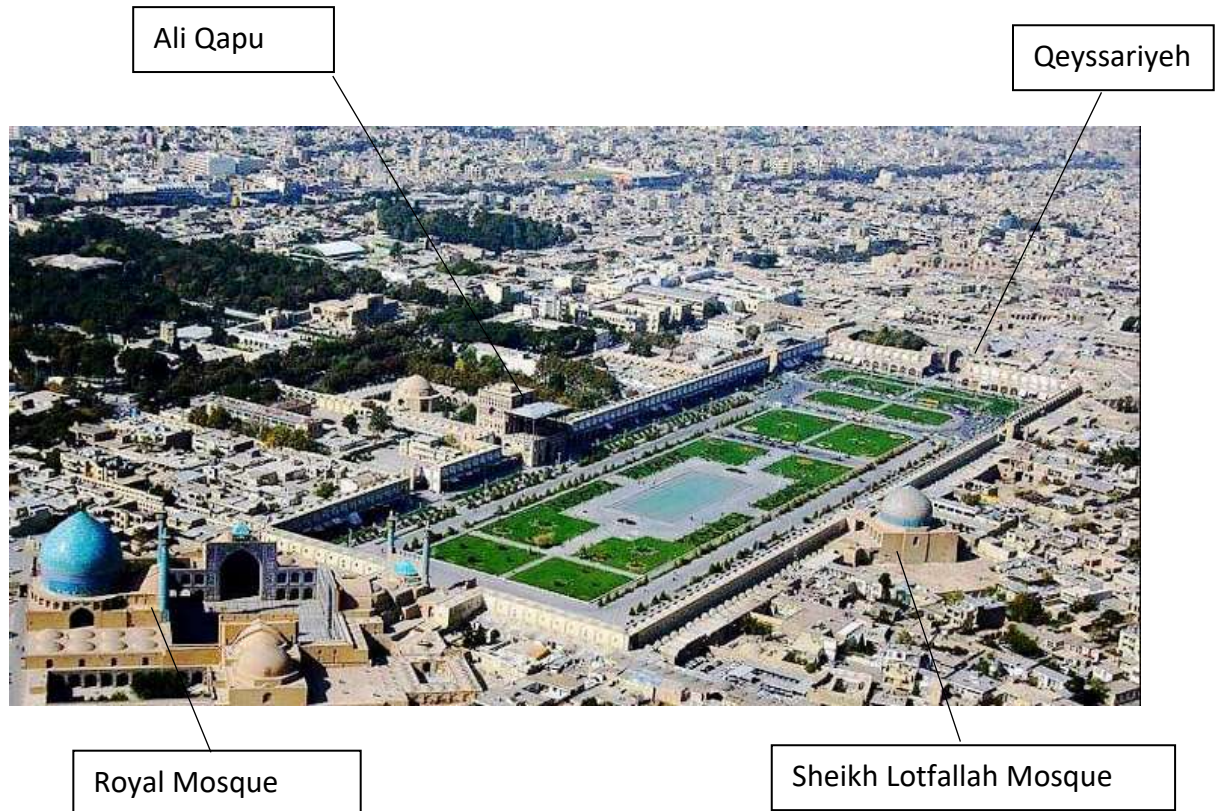
Figure 6-5: Aerial view of Naghshe-Jahan-Square

Alternatively called Meidan Emam, and previously known as Meidan-e Shah, Naghshe-

Jahan-Square does not conform to the standard urban ensembles within Iran, as cities

in the country are generally highly concentrated with minimal open areas. In stark

contrast to this tradition, the public square in Isfahan is huge, with dimensions of

560m by 160m with a total area of 9 ha. Each of the architectural components that

demarcate the square, such as the shopping arcades, have magnificent aesthetic

qualities and are decorated with an abundance of enamelled ceramic tiles and

paintings.

The Royal Mosque, with the Persian name of *Masjed-e Shah* (Figure 6-6), is a building

situated in the south of the square and oriented in the direction of Mecca, attracting

high levels of interest. It is still considered the most famous example of the colourful

architectural style that reached its peak during the period of the Safavid dynasty in Iran (1501-1722; 1729-1736).

Figure 6-6: The Royal Mosque (Masjed-e Shah)

On the west side of the square, the Pavilion of Ali Qapu (Figure 6-7) is part of the monumental entryway to the palace grounds as well as the royal gardens situated to the rear of the mosque. It is famous for its apartments, large portal and covered terrace (*tâlâr*).

Figure 6-7: Ali Qapu

The Portico of Qeyssariyeh (Figure 6-8) to the north of the square provides access to the Esfahan Bazaar, which has a length of 2km.

Figure 6-8: Qeyssariyeh

Finally, the Sheikh Lotfallah Mosque (Figure 6-9), situated on the eastern edge, was originally constructed as an exclusive mosque for royalty and is now regarded as a classic example of Safavid architecture.

Figure 6-9: Sheikh Lotfallah Mosque

The Naghshe-Jahan-Square formed the cultural, economic, religious, social, governmental, and political heart of the Safavid capital. The large sand-covered promenade was utilised for celebratory events, walking, delivering capital punishment, polo games and troop assembly. The arcades that border the square host multiple shops; the Bazaar (Figure 6-10); a balcony situated over the portico to the vast Qeyssariyeh bazaar allowed musical performers to give recitals to the public; the *tâlâr*

of Ali Qapu provided access from behind to the royal court, where ambassadors were sometimes welcomed by the Shah. In summary, the royal square of Isfahan was the foremost monument that represented social and cultural life in the Safavid era. Naghshe-Jahan-Square satisfies three of the 10 stipulated criteria: Criterion (i): it comprises a homogenous urban collection, with each of the architectural components being decorated using an abundance of enamelled ceramic tiles and paintings; Criterion (v): it is an extraordinary urban achievement in Iran, in which urban areas are highly concentrated with minimal open areas; Criterion (vi): the Naghshe-Jahan-Square was the core of the Safavid capital and was the foremost monument in terms of its ability to represent social and cultural life in the Safavid era (1501-1722; 1729-1736).

Figure 6-10: The Bazaar

6.3.4.1 The status of Naghshe-Jahan-Square as a World Heritage Site

As noted in Chapter Three, for inclusion on the World Heritage list, candidate sites require to meet at least one of the 10 criteria specified in the assessment, which are applied together with three overall factors: their uniqueness, historical authenticity and their integrity. Naghshe-Jahan-Square satisfies three of the 10 stipulated criteria.

Criterion (i): Naghshe-Jahan-Square comprises a homogenous urban collection, constructed in a limited timeframe on the basis of a distinctive, organised and coordinated plan.

Each of the architectural components of Naghshe-Jahan-Square, incorporating the arcades, is decorated with an abundance of enamelled ceramic tiles, as well as paintings, which are dominated by floral adornments, such as blossoming trees, vases and bouquets, without prejudice to the figurative artwork in the style of Riza-i Abbasi, who was in charge of the Isfahan painting school when Shah Abbas ruled the country.

Criterion (v): Isfahan royal square is an extraordinary urban achievement in Iran, a country in which urban areas are highly concentrated with minimal open areas, apart from the courtyards within caravanserais. It is an example of a type of urban design that has inherent vulnerabilities.

Criterion (vi): Naghshe-Jahan-Square was the core of the Safavid capital. As noted above, the large sand-covered promenade was utilised for celebratory events, troop assembly, walking, delivering capital punishment, and polo games. In summary, the royal square of Isfahan was the foremost monument that represented social and cultural life in the Safavid era (1501-1722; 1729-1736).

Integrity

Located inside the borders of the site are all the constituents required to exhibit its Outstanding Universal Value, which include, but are not limited to, the public urban square and the two floor arcades that demarcate its boundaries, the Sheikh Lotfallah Mosque, the pavilion of Ali Qapu, the portico of Qeyssariyeh, and the Royal Mosque.

The property's integrity is threatened by various factors, including the development of the economy, which is leading to increased demands to permit the construction of buildings with multiple storeys for commercial and parking usage in the historic quarter inside the buffer zone, projects targeted at expanding roads (which are a threat to the property boundaries), growth in tourism, and the risk of fire.

Authenticity

Naghshe Jahan's monuments are considered to have authenticity with respect to the way they are formed and designed, the substance and materials used in their construction, setting and location as well as their essence. The public urban square's

surface, which was previously topped with sand, now comprises stone paving. A pond was constructed at the heart of the square, grass areas were developed during the 1990s, and two new entryways were formed on the north-eastern and western sides of the square. Nevertheless, such activities, along with planned restoration projects implemented by Cultural Heritage specialists, incorporated local expertise and technologies in order to ensure that the property's authenticity was maintained.

6.3.4.2 Management of Naghshe Jahan

On 5th January 5th, Naghshe-Jahan-Square was officially recorded on the Iranian National List of Monuments as item no. 102, in line with the National Heritage Protection Law (1930, updated 1998) and the Iranian Law on the Conservation of National Monuments (1982). The responsibility for the administration and supervision of the listed World Heritage site, which belongs to the Iranian Government, falls with the Iranian Cultural Heritage, Handicrafts and Tourism Organization (the administration and funding of which is the duty of the Iranian Government), via its Isfahan branch. The municipality owns the area enclosed within the square, while the bazaars surrounding the square and the shops in the vicinity belong to the Endowments Office. The municipality of Isfahan is tasked with site illumination.

The authorities and the local government have future plans to develop the lighting scheme of the square. It is a very famous destination for national and international tourists, and hosts cultural, religious, leisure, social, economic and even political functions throughout the year. It is a large square within the city and visitors can gain 24-hour access to the green landscape within the square.

63.4.3 Data-collection process in Naghshe-Jahan-Square

There were three data collection stages conducted in Naghshe-Jahan-Square. The first stage started with gathering data from the site as the second case study, to understand the existing lighting scheme installation on the historical buildings, the bazaar and the green landscape. Secondly, behaviour observation was chosen as the second method of data collection, focusing on people's activities, interactions, and behaviours amongst each other and with the site. What was in focus with this method was how the lighting scheme facilitated some behaviours, which according to the secondary research, may help with cultivating a sense of place. At the final stage, the

visitors of the site were approached for semi-structured interviews to gain knowledge about their feelings, emotions and perceptions on the sort of activities that they engage in, as well as how they feel the existing lighting scheme makes them feel and cultivates a sense of place.

The data collection in Naghshe-Jahan-Square was carried out over a three-week period during the summer period. I visited the site before sunset to midnight for as long as there were people within the site. (The questions arranged for the semi-structured interview with the visitors to this site are included in Appendix D).

6.4   Summary and Conclusion

This chapter aimed to take a step in addressing the two objectives of the research, which were to 1) identify and document relevant experiences and opinions of people related to lighting in historic sites; and 2) analyse and compare lighting features of historic sites, ethnographic data collection methods were used. Thus, it initially studied and analysed the two case studies and compare the lighting features of these sites, and explored how they enhance a sense of place amongst users. Then secondly, it presented the steps of data collection processes of the primary research which gained the relevant opinions and experiences through interviews with all three groups, these being the visitors of the sites, Lighting Designers and Heritage Experts. The behaviours and interactions on the part of visitors to the heritage sites were also studied through observation.

While this chapter focused on introducing the case studies and the data collection process within each one, the findings from the two sections of the data collection are presented in the next chapter. Accordingly, the first section presents the case study research findings from the best practice case study of Saint-Avit-Sénieur in France and the second case study of Naghshe-Jahan-Square in Iran. The second section presents the findings from the observations and interviews from the three groups, which are presented using the technique of thematic analysis.

Chapter Seven: Findings

7.1   Introduction

The aim of this chapter is to present the findings from each of the case studies. It initially presents the findings gathered by studying the two case studies' lighting design schemes. Secondly, it presents the findings gathered and coded from the interviews and questionnaires supported by the observations. These are presented under three main themes namely, Theme One: Placemaking: benefits and drivers; Theme Two: Historic sites as medium for placemaking; Theme Three: The principles of lighting for historic places and its effects.

7.2   Case studies

7.2.1 Best practice: Saint-Avit-Sénieur, France

Since the installation of the permanent lighting scheme, in the summer months, poetic evening walks entitled "Les Murmures" are organised in Saint-Avit-Sénieur, and take place on a nightly basis from 22:00 to 01:00. This lends life to the abbey and village via a well-planned arrangement of illumination and sounds, as well as image and video projections, which provide accompanying content for those participating in the walk,

enabling an illusory experience to be had that stimulates the emotions and senses (Figure 7-1).

Figure 7-1: The new lighting on the entrance of the church

The lighting scheme for Saint-Avit-Sénieur was designed by lighting designer Lionel Bessières at Quartiers Lumières. He was inspired by a poem written by Paul Verlaine when designing the illumination of the site, which embraced the architectural components of the village, its historical features, and its heritage-related and seductive qualities based on the spiritual nature of poetry. Murmurs of light are created by the distinctions between light and dark, past and present, reality and poetry, and culture and nature. On the opening night of the Lighting Project, Bessieres expressed: "It seemed important to us to recreate the emotion and poetry that comes out when the site is unveiled by daylight. We wanted to give it a second life, making it whisper in the night with the help of a dynamic projection of images and words. We wanted to create a magical space playing with reliefs, contrasts and shadows to allow the visitor the freedom to enjoy this place with his own imagination in a multisensory experience."[8]

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[8] http://www.griven.com/index.php?action=t_news_eng&id=268

Illumination of the western side of the abbey (Figure 7-2) is achieved using projectors, equipment intended for extended use in outdoor environments that contain 250W LED light sources and are capable of producing appropriate chromatic lighting and projecting "gobos" created after tracking particular objects. The video projectors display a fresco of animated images, which portray the myth of Saint-Avit-Sénieur and the history of the place.

Figure 7-2: The western facade of the abbey

Digital Multiplex Signal (DMS) is a digital-network communication standard that offers flexible control options for a wide variety of lighting, including LEDs. In this project, DMX LED cutting projectors are used to project calligraphy and palimpsests onto the wall of the abbey. In the water well, a speaker plays soundtracks comprising extracts from the rules of the chapter in Latin (Figure 7-3). The well's surface is covered by a metal lock with laser cut outs that tell the story of the legend (Figure 7-4). The colour temperature of this section of the abbey is against the west side of the church and this colour contrast is not generated such that it reflects the history or the buildings on the site. So, while this part is lit with blue lights, the main colour of the west side of the church is red (Figure 7-5). Another design specification within this section is such that the calligraphy and poems projected using the light of the rulebook are unclear and difficult to read. It therefore seems that the poems were not intended to be read, but

to instead serve as accompaniments with soundtracks of the same poems, thereby

giving rise to an atmosphere for the visitors.

Figure 7-3: Calligraphy on the central yard's walls

Figure 7-4: Metal lock

Figure 7-5: South side of the church wall

A 5-minute video montage displays dreams on the wall of the cloister and the transept of the abbey, where these light whispers are accompanied by sound creations (Figure 7-5). The designer stated: "For this permanent light setting, we needed a completely waterproof, reliable solution. Gobo LED has turned out to be the perfect choice."[9] Gobo is a stencil or template placed inside or in front of a light source to control the shape of the emitted light. In these lighting installations, the lighting is controlled by a wireless DMX control system. As a result of the numerous benefits of the sole powerful LED that the IP65 (Ingress Protection) rated Gobo LED 80 D is fitted with, it is capable of projecting an intense and precise depiction of graphic designs or logos through the use of metal or dichroic gobos. The IP ratings are defined in international standard EN 60529 (British BS EN 60529:1992, European IEC 60509:1989). They define sealing effectiveness levels for electrical enclosures against intrusion from foreign bodies

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[9] http://www.griven.com/index.php?action=t_news_eng&id=268

(tools, dirt etc.) and moisture. IP65 is rated as "dust tight" and protective against water projected from a nozzle.[10]

The equipment used in this project is designed to be reversible in consideration of the value of the site. As the lighting scheme was designed for permanent use on this site, the equipment used required to be of a high quality. This study's data collection was undertaken four years after the installation. Despite the length of this period, all the elements were completely functional such that there were no issues, with this demonstrating the well-suitedness of this design to the site.

7.2.2 Naghshe-Jahan-Square, Iran

The site is illuminated by light emanating from public lighting installations, as well as light from shops and historic structures surrounding the square. On site, there are near 60 poles with high-pressure sodium lamps serving as the main source of lighting for the square (Figure 7-6). 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. For instance, in the grassy area in the middle of square, one area is lit while the neighbouring area is left dark. The lack of light in such areas leads to reduced visibility, giving rise to safety issues and reducing accessibility in some areas. 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 has resulted in light pollution.

Overall, the centre of the site is darker than the historic building's surroundings. When a visitor stands in middle of the dark area in the centre of the square, much of the square is brighter than where they are standing, which helps the visitor to understand the spatial space of the site. The historic building around the square is also such that it can be better viewed at night.

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[10] https://www.enclosurecompany.com/ip-ratings-explained.php

Figure 7-6: 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 7-7). Shops are located all around the site, and every shop is lit with various qualities and quantities of indoor and outdoor light. Having spoken to the management of Naghshe-Jahan-Square, it is apparent that there are no set regulation or guidelines regarding the light of the shops in terms of quality or quantity. Each shopkeeper installs his or her own lighting for their shops with the aim of attracting increased levels of custom. As a result, the lighting in these shops differ in terms of colour temperature and light colour, with many of the shops being set up such that there is little harmony. In fact, the historic buildings and even the landscape of the site are all much darker than the shop windows. The main lighting of the site is therefore concentrated such that it illuminates the shop windows, rending the whole of the historic site close to invisible at night.

Above the shops is the first floor, which features several arch-shaped terraces (Figure 6-7). These terraces are lit with cool light, which stands in contrast with the warm lighting installations used in most of the shop windows. This contrast helps with making the square visible and tackling disability glare. Furthermore, as these terraces are lit with floodlighting, the architectural features are clearly observable. However, some of the light sources have become damaged and are not functional, meaning that

some of the terraces are plunged in darkness at night or at least less visible than others.

Interestingly, the ground of the site is covered with high glossing and reflective stones, reflecting the lighting of the shop windows even more (Figure 7-7). 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 socialising and picnicking takes place. This is due to the contrast in the level of light and the need for the eye to adapt from a bright context to a darker one. Also, when standing in middle of the dark square looking towards the shops, the majority of the view includes a dark background with very bright shops in the middle. This is referred to as disability glare, as noted previously. As the SLL Lighting Handbook by Boyce and Raynham (2009) makes clear, disability glare is a problem stemming from excessive contrast created by the relative brightness (luminous intensity) of a small source seen against a much darker background. This is exactly what is observed in the square when the shops are viewed from a distance. However, moving closer means the bright shop covers a larger portion of vision, and so the contrast problem lessens or resolves.

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 7-7).

Figure 7-7: Light from nearby shops

Bollards and smaller poles in the landscape of the site serve as another light source in Naghshe-Jahan-Square (Figure 7-8). The main issue with these is that they emit a relatively harsh glare. Interestingly, many of the visitors picnicking on 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 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 area illuminated.

Figure 7-8: Illumination of pathways with mini poles

Naghshe-Jahan-Square has architectural features that are decorative and colourful. These include the blue ceramic tiles of the entrance of Sheikh Lotfollah Mosque and the dome, which is ornamented using both glazed and unglazed cream-coloured tiles. The Royal Mosque is mainly decorated with seven-colour mosaic tiles and calligraphic inscriptions, which are mainly blue in colour. It also features stone carving in parts. Other parts of the square are also decorated with cream coloured tiles and other coloured decorative features, such as paintings.

Each of the historic buildings within the site have 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, with there also being problems relating to both glare and the colour rendering index (Figure 7-9).

In the Royal Mosque, while the main colour 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 7-9).
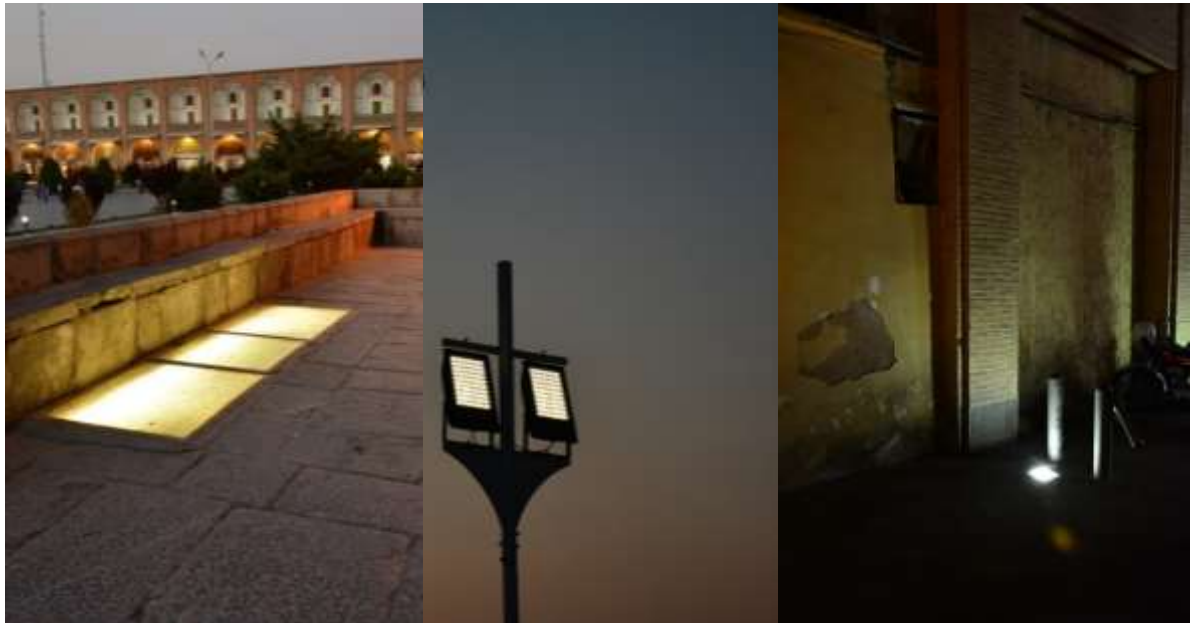
Figure 7-9: Floodlighting for the buildings and the site more generally

7.3   Findings from interviews, questionnaires and observation

As discussed in Chapter Four, this research uses ethnographic methods to collect data. The ethnographic techniques used were interviews, questionnaires and behaviour observation. The data collected in the course of the interviews came from three distinct groups, as noted previously: Lighting Designers, Heritage Experts and people visiting each of the sites of Naghshe-Jahan-Square and Saint-Avit-Sénieur. Questionnaires were also used in conjunction with interviews in Saint-Avit-Sénieur. Behaviour observation was conducted for both sites. All the data collected from these groups were transcribed, and Thematic Analysis (AT) was used to interpret the data (Braun and Clarke, 2006). The data was also coded and defined using NVIVO 12 software. Through analysing the data, three main themes emerged: a) Placemaking: Benefits and Drivers; b) Historic Sites as a Medium for Placemaking; and c) the Principles of Lighting for Historic Places and its Effects. Each theme was then divided into subthemes, as depicted below (Figure 7-10):

Main Themes	Sub-Themes

Theme One:

Placemaking: Benefits and Drivers

The Benefits of Transforming Spaces to Places

People's role in Placemaking

Theme Two:

Historic Site as Medium for Placemaking

Management as an Aspect in Turning a Historic Space to Historic Place

Authenticity as an Aspect in Turning a Historic Space to Historic Place

Theme Three:

The Principles of Lighting for Historic Places and its Effects

The effects of Lighting in Historic Places

Lighting Design Considerations for Historic Places

Lighting Design Characteristics for Historic Sites

Figure 7-10: Themes and subthemes

7.3.1 Theme One: Placemaking: Benefits and Drivers

One main theme emerging from the data pertained to the benefits of placemaking and the main driver of the practice of transforming spaces into places. Two subthemes were identified: a) the benefits of transforming spaces to places; and b) the role of people in placemaking. Prior to getting into the details of these subthemes, it should be noted that, on the one hand, most of the Lighting Designers were not familiar with the concepts of space and place and placemaking. In fact, only two out of eight individuals were familiar with these concepts, one of whom had a background in sociology. All others from a lighting design background required further explanation regarding what was meant by space, place and placemaking. However, once given an explanation, most of them could point to related topics, some gave detailed and specific opinions and others pointed to the topic indirectly.

On the other hand, all four Heritage Experts, all of whom had an architectural background, were familiar with the concepts of place and placemaking and responded to the topic in a high level of detail. This demonstrates that these concepts are recognisable in architectural fields, but this is not true - or at least true to a lesser extent - in the field of lighting design.

None of the individuals interviewed on-site were familiar with these concepts. However, some of the information the different groups of interviewees provided in response to the discussions did indeed relate to placemaking processes. So, although they were not aware of what a placemaking process involves in theory, they did point to certain aspects of placemaking. Accordingly, one of the main themes that was established, based partly on indirect opinions and findings, related to the placemaking process.

7.3.1.1 The benefits of transforming spaces to places

One of the subthemes identified related to the importance of turning spaces to places, having regard to the benefits that places can provide for public urban spaces and the people making use of these. Most of the experts, both the Lighting Designers and the Heritage Experts, pointed to spatial or social benefits that places offer within public areas. Urban spaces, as one of the Lighting Designers explained, are defined as follows:

"Public space is all of the space outside a building, unless there is a gate, that's a public space. The pavement, the road, the square, the garden, the park. For me, all of it is public space" (LD4). Accordingly, they pointed to some of the aspects that they believed pertained to the practice of turning a space into a place. Furthermore, the people who were interviewed within the two sites also outlined certain reasons regarding why they were visiting them, which supported what the experts had pointed to in relation to the benefits associated with places.

Accordingly, one of the important space-related offerings that the majority of the experts pointed to was the **encouragement of social engagement** among people. Two of the Heritage Experts based in Isfahan pointed to the role of Naghshe-Jahan-Square as a place that especially facilitates family gatherings (Figure 7-11). They both voiced the opinion that not all urban spaces within the city serve as social gathering destinations, but those that are specific places can encourage such gatherings. People interviewed in Naghshe-Jahan-Square also agreed that this site was one of their favourite places to meet friends and families and engage in social activities, such as walking together, picnicking and bringing children to play ball games on the grassy areas. Some of the reasons regarding why they chose this environment for socialising were reflected in submissions such as "this place is really peaceful" (People IR), "we love coming here; it's very suitable for family gatherings compared to other public spaces in the city" (People IR) and "we like coming here as it's beautiful, and there are no cars around, so it's quiet" (People IR). They also pointed to ease of accessibility, the location of the site and the identity of the place.

Figure 7-11: People picnicking in Naghshe-Jahan-Square

The visitors approached on the French site offered the same opinions, with one participant explaining that "this place is now an interest to all of us in the family and we like to come and visit it all together" (People FR). Another said "the lighting scheme has certainly motivated us to come here for socialising with friends" (People FR) (Figure 7-12).

Figure 7-12: People sitting together in Saint-Avit-Sénieur

One of the Lighting Designers (LD2) also highlighted the motivation of social engagements amongst people in relation to the concept of place. One Lighting

Designer (LD4) referred to these places as being supportive to "social health," and another voiced the opinion that a place fosters social wellbeing through emotional attachments, especially for "…the local community, particularly its residential community that overlooks the building" (LD7).

One of the important matters mentioned as resulting from placemaking was the fact that the site **gains meaning and value**. One of the designers, who had a sociology background, described the difference between space and place in terms of the point that place is associated with value, but spaces are not so obviously associated with such meaning: "Talking about urban planning, space is more about something which lacks meaning rather than value. As soon as you give it value, whether it is positive or negative, it's a place. It's identifiable as having certain meanings as being represented in a certain way, as having been interpreted all that as kind of featuring in a meaningful way in different people's lives" (LD5).

One of the Heritage Experts (HE1) also referred to meaning in value as an important characteristic of places. She gave several examples of sites within Isfahan, explaining how some of them were meaningless spaces that could not be regarded as places; other sites, by contrast, carried different values within them as places. One Lighting Designer also stated that value is defined differently by different people as individuals hold different interpretation and all have different likes and dislikes. He spoke about positive and negative values and the fact that turning a space to place is usually associated with positive values: "There's a value judgment. When we say place, we tend to be assuming that it's a place in the sense that it is a value, and we treat the word 'value' there in a positive sense, so […] a space is something which doesn't have a positive value" (LD5).

Another Heritage Expert (HE2) emphasised the importance of **meaning as a feature of place**. He believed that spaces that are meaningless to people can be construed as places. In other words, the fact that there is a certain component relating to meaning - whether this is built on history, specific functionality, cultural aspects, or even a meaning that a space can gain from a successful lighting scheme - constitutes an inseparable feature of places. This Heritage Expert explained that meaning can be categorised into two different groups: 1) personal meanings that are built in the mind

of user, such as values, culture, beliefs, and social principles; and 2) meanings from places that share a relationship with the physical features of a place.

Figure 7-13: Riding on horse carriages is one of the attractions for visitors

Another feature of a place is that it **amplifies identity**. The experts put forward the view that a place has the potential to encourage behaviours that strengthen activities relating to people's identifications. In this regard, one Lighting Designer referred to the example of how families use the site in Naghshe-Jahan-Square, making specific reference to the fact that, within this site, there is a Bazaar as well as horse carriages, but the commercial and sport-related activities are located in the borders and what is in the centre are families picnicking together on the grassy parts (Figure 7-13). She believes that the family is "a transformational centre" (LD4), and so a place that can facilitate such a gathering can amplify identity: "Not only can we amplify the identity, but we can transform the identity. Not really transform but make visible; this is really important" (LD4). At the same time, some people expressed how horse carriages moving around the square has become part of the identity of the place, with some stating that, wherever they see horse carriages elsewhere, it reminds them of Naghshe-Jahan-Square.

When interviewing the people in Isfahan, they all spoke about Naghshe-Jahan-Square proudly in terms of the city's identity. A participant stated "Naghshe Jahan is the

symbol of Isfahan; whoever visits Isfahan must see this place as it has an important historic identity" (People IR). Another participant said: "Whenever I visit Naghshe Jahan, I feel proud of being from this city as it gives me a rich identity" (People IR).

All four Heritage Experts believed that one of the important goals of their city council, and indeed all councils, is to emphasise a sense of identity amongst the local people and visitors alike by improving the physical features of specific places within their cities.

Another matter to consider in relation to placemaking is the concept of **visual enrichment**. It has been claimed, as discussed previously, that, when a space is turned into a place, visual enrichment of the space is one of the goals of the design process. The majority of the locals in Saint-Avit-Sénieur spoke about how the site has become more visually appealing to them since the installation of the lighting scheme (Figure 7-14), with this serving to make clear the beautification-related component of placemaking.

Figure 7-14: The majority of the locals in Saint-Avit-Sénieur spoke about how the site has become more visually appealing to them since the installation of the lighting scheme

Two of the Lighting Designers (LD2, LD3) and the Heritage Experts (HE3) pointed to the fact that placemaking can **enrich the economy** of an area (Figure 7-15). They point to features such as having markets, food courts, cultural events and anything else that can increase the chance of a place being used until later in the evening, with such features serving to enhance commercial activities. One said: "Perhaps there'll be a

market. These are economic, and so I say for the night-time design, we are also going to affect the economy" (LD3).

Figure 7-15: The bazaar is set out all round the perimeter of the square, and is open until late at night

This Lighting Designer also pointed out three specifications of a night-time design which she believed gave rise to a place that is conducive to increased levels of economic activity: "Do we have *trade and commerce* of some sort as well as safety? Do people feel *welcome*? Do they feel *secure* in coming? So those are the three pillars of night-time design" (LD1).

People approached in Saint-Avit-Sénieur outlined several economic benefits that have followed since the installation of lighting. Many of them pointed to how this particular site has resulted in increased levels of tourisms. A local shopkeeper stated: "We sell a lot more with all the tourists coming to visit the place, even at night-time, which has been really good for us" (People FR). Some of the locals state that their Airbnb rooms are usually rented out. One cheerfully stated: "There's lots of tourists coming to see the site at night, so they stay in the village to see other places as well and relax for few days. We have been renting rooms a lot more than before" (People FR).

In relation to Naghshe-Jahan-Square, one of the Heritage Experts (HE2) from Iran also emphasised features of the city that make it a prime tourist destination (Figure 6-16): "Isfahan includes many places like Naghshe Jahan, and so it is one of the first tourist

destinations in Iran, even amongst foreigners. This is the result of having successful places in cities."

Figure 7-16: Naghshe Jahan, one of the top tourist destinations in Iran

7.3.1.2 The role of people in placemaking

The second sub-theme is the role of people within the process of placemaking. In introducing the principles of placemaking, a large body of what was said by participants related to people in different ways. Most groups referred to the role of people in such a way as to suggest that placemaking cannot occur at all without consideration of this factor.

One of the aspects that was mentioned by different designers in relation to placemaking was the matter of considering **who uses the space and how the space works** for them. One Lighting Designer offered the following example: "It's young people, old people, dog walkers, whatever, you know, and how are they experiencing this space?" He also added the following: "Because we're social researchers, […] we're concerned with how particular spaces work, and how they work for very different kinds of people" (LD8).

In this regard, when people from both sites were asked whether they thought the place in question is designed for one gender in particular or both, those in Saint-Avit-

Sénieur all stated that it is equally designed for everyone. Many of the female interviewees in Naghshe-Jahan-Square, on the other hand, stated that this site is designed for male visitors. They made particular reference to the fact that the lighting is insufficient and dark in places: "They haven't considered female visitors. It's too dark. We don't feel secure if we come alone" (People IR).

In terms of age, interviewees in Saint-Avit-Sénieur stated that the site is suitable for all members of the family across different age groups. The majority of the visitors of Naghshe Jahan were also observed to have children with them, albeit several interviewees stated that the site was not suitable for children (Figures 7-17 and 7-18).

Figure 7-17: Child and lighting in Naghshe-Jahan-Square

Figure 7-18: Children's connection with the lighting in Saint-Avit-Sénieur

Two of the Heritage Experts (HE1, HE3) believed that there should be a balance between designing certain places in a way that **considered the local people's needs versus those of tourists**. They voiced the opinion that tourists are important in relation to the economic and cultural benefits they give rise to. One other Heritage Expert explained that, although tourists are important, the local people should be given priority: "We want to make it safer by increasing the numbers [of tourists], but we don't want the numbers to be so high" (HE2).

The people interviewed within the two sites offered different opinions. Those who were interviewed in Saint-Avit-Sénieur, even the locals, were very positive regarding the presence of tourists in their city since the installation of the lighting scheme. They believed that the lighting scheme had attracted tourists to their city and that this has been beneficial in different ways for the locals. Not all the people in Isfahan held this opinion. One participant said: "Isfahan is such an attractive destination for tourism already. I think the council or the designers should consider the local people's preferences first" (People IR).

In addition, the **place's function and people's activities** within the place was also highlighted as requiring to be considered in the placemaking process. One of the Lighting Designers (LD2) explained that that it is important to study why people visit a

specific place: what does it offer them and what facilities does it provide? In the placemaking process, it is necessary to take into account both the function and the facilities relevant for certain activities. One Lighting Designer explained: "We'd go to places and study what people are trying to do, how they understand their space, what, again, political and other differences there are between different users of the space. And then we try to think about the way in which light might intervene and support different kinds of uses or help people decide which uses are important" (LD8). One of the Heritage Experts (HE2) offered the example of Naghshe-Jahan-Square's pool and the fact that it has become a place for children to play in. Many people voiced the beliefs that, because this place is a tourist attraction, children should not be playing in the pool (Figure 7-19).

Figure 7-19: Children swimming in the pool in Naghshe-Jahan-Square

The majority of the people in Naghshe-Jahan-Square were observed having picnics with their family members, or sitting in the grass and around the pool to enjoy the scenery. Some such individuals of course came for shopping or to simply view the shops, but during the night-time, most of the activity involved relaxing and picnicking. During the dawn, when it was just starting to get cooler, lots of children were seen in the narrow pool and playing among the water fountains. The darkness in the pool resulting from the lack of lighting meant that, as the day progressed, numbers of children playing there dwindled (Figure 6-19).

Figure 7-20: People picnicking in Naghshe-Jahan-Square

Political debate and its place within placemaking was raised as an individual point only by the sociologist Lighting Designer(LD5). He believed that, as a social researcher, the best that can be done is to help people clarify the political debates that occur. Interesting, when interviewing the people in Naghshe-Jahan-Square and asking them about what they like and dislike in relation to what takes place in the historic square, all of them mentioned an aversion to political events of any sort taking place within this space. Similar views were espoused in relation to political symbols.

Another point of interest raised by several Lighting Designers related to considering **people's narratives** with the space: "…What has this place meant to people? What kinds of narratives do they have for the space?" (LD7). This referred specifically to people's narratives, but many experts referred to the narrative of the historic site, as discussed later in relation to the second theme.

One important point raised by all three groups of interviewees related to **engaging local people in the design process**, with one Lighting Designer (LD2) referring specifically to "talking to the people.". One of the Heritage Experts explained that engaging people is essential in placemaking as it "makes people sit up and realise, one, there are other solutions in terms of lighting and art, and for the city, and two, that you can involve the community" (HE4). He espoused the view that involving the local community is very important, as "this isn't just a lighting design from a designer, but it is a community co-design project and that should attract some attention and hopefully

some understanding within the local authority that they should be including the community in the changes and improvements that they make to their own environment" (HE4); such engagement should involve ordinary people as "they really appreciate being asked [and] being given the chance to have a little bit of control over their environment, instead of it being imposed on them" (HE4).

One of the Lighting Designers gave a specific example in relation to a lighting design project and why it is important to listen to people: "It's very important to listen to people's opinion and try to work out whether it's […] something that you need to deal with or [whether] you can somehow […] realise that it maybe not as big deal as […] some people [think] it is […]; for example, you know a cold blue light […] in Asian cultures is sometimes seen as being the light of funerals. And […] these are historic cultural issues that are changing now as the world changes, in some people's minds they are still important" (LD5).

Two of Lighting Designers stressed the importance of this point, putting forward the view that it is an important factor in placemaking process. One of them added: "So the comments and the feelings and the perceptions of the local community are very important because they are going to live in this light" (LD4). One Lighting Designer (LD8) mentioned that it is essential to engage people in a lighting design for placemaking, with different characteristics of a design having the potential to give rise to different meanings across different cultures for different people. It is therefore not possible to design a lighting scheme for a place without being aware of the local people's ideas, cultures and what different symbols mean to them. Another Lighting Designer added the following: "In different cultures as well, [LD6] lots of light is a symbol in some cultures of affluence. So we are sometimes confronted with projects where the expectation is to make things very strong and very bright to show that it's an affluent society" (LD6).

Another Lighting Designer raised the point that reduced levels of vandalism can result within a place if the people are involved in its creation: "If the local community feels invested, if they feel it's theirs. If they feel they were listened to, they had something to do with it, they are less likely to break it. They are less likely to get angry about it because sometimes people will tell you 'Too much light there. I used to hide out there.

You know, that's too glary. I don't like it. It hurts my eyes.' Or 'You chose this place. We don't like it. It's different.' You can get many different opinions from people they don't like it. If you consult with the community, there's less opportunity for that, one. And two, more opportunity to do a better job" (LD1).

Some of the other interviewees expanded on the matter of local engagement and made specific reference to **the extent to which people should be involved**. One Lighting Designer spoke about the balance that there should be in a placemaking project in relation to engaging people: "The residents already feel pushed out here. And what we want to do is balance that very, very carefully" (LD7). One of the Heritage Experts (HE2) believed that people can be interviewed to gain their ideas on the use of the place and their general ideas; however, they should not be engaged in the design process and it is the lighting designer's job, in this case, to develop a lighting scheme based on the many different aspects that he is knowledgeable about. Another Lighting Designer espoused a similar view: "Engaging the people who use the space is very important. But […] I always say you are not designing the space, but you are informing. I say, community-informed. Please inform us. Tell us how you wish it was. Tell us what you do now. Tell us how you wish it was and then *we can design something because we are the designers.* Because a lot of professionals are against [this], do you know what I mean? They are against community engagement because they think the community's designing it. They are against [it], so they just […] don't talk to the community; don't talk to that little girl who picnics there every year; don't talk to her because she wants to design it. No, you just have to say at the beginning we're not voting. You are not designing, but you are giving us ideas that we can use, and then we will come back to you to discuss the ideas" (LD4).

There was also extensive discussion pertaining to the need to **educate people** through the placemaking process and through lighting. One of the Heritage Experts (HE4) based in Edinburgh emphasised that it is possible to train people in relation to specific skills and knowledge if needed to enrich the engagement process in placemaking: "We have to train people to understand what values are [and educate them] to connect them with heritage." The people in Saint-Avit-Sénieur pointed out that they feel they should be engaged with their heritage and that they were interested to learn about this. One

of the Lighting Designers stated the following: "Actually you have to educate. That is why I do the light walks, my night seeing walks. It's to educate people: to feel, to see, to voice what it is. Because they do not know. You can't ask people what do you think if they don't know anything about it" (LD4). As she noted, this Lighting Designer takes people for night walks and talks about lighting in those places across different parts of the world. She believes that choosing historical sites for these informational walks will be "giving them twice as much information" as you give them information of the place at night, while they will experience the place in daytime later. Another Lighting Designer also mentioned that, when information is presented to visitors and they are educated about the place, together with its history and the lighting, they can be engaged in the design process with greater levels of knowledge (LD1). Another Heritage Expert added that if people are not provided with the appropriate information about the site and the lighting, their engagement may not be as fruitful, potentially even to the point that they are unable to appreciate the project in full (HE4). Another of the Heritage Experts took the view that, for placemaking, what is designed should be able to be easily perceived by people; furthermore, it should not be complicated or difficult for people to understand (HE3).

7.3.2   Theme Two: Historic Sites as Mediums for Placemaking

One further main theme of the findings of the study relates to how historic sites work as a medium for placemaking. As one of the Heritage Experts (HE4) stated, "historic sites are a very important part of any city, due to their role in heritage and tourist attraction." Another pointed to the importance of heritage in placemaking and creating atmosphere: "If you don't look after the heritage, if you spoil the heritage, you've lost the atmosphere" (HE3). This theme comprises two subthemes pertaining to two of the most important aspects that should be considered in the placemaking process for historic sites. The first subtheme relates to the management of the historic sites; the second to authenticity.

7.3.2.1. Management as a consideration in placemaking for historic sites

This theme pertains to the role of management in the placemaking process for historic sites, with specific reference to lighting. The Heritage Experts were the main group with management responsibilities in historic sites, and so they were particularly keen

to contribute in relation to this area. However, as the Lighting Designers had all had previous experience in working with lighting in larger projects, many of which were on historic sites, they were also familiar with the masterplans and regulations. This resulted in the development of this theme under the historic site as a medium for placemaking.

One of the management-related aspects of a historical site, as considered in relation to the placemaking theme, is the **cooperation of different groups of experts**. Many of the Lighting Designers pointed to the fact that, for a successful placemaking process to occur, it is important to consult different groups and forms of expertise: "We need to bring a team together to light the square" (LD6). One expanded on this point: "We bring the heritage experts, and we have to have a workshop, and we have to do lots of reading to prepare, maybe some interviews. We bring our social researcher, the guy in the sociology department, to bring together the reasons why we would do anything at all besides safety" (LD5). Another put forward the view that taking a project forward without consulting different groups of relevant people runs the risk of an unsuccessful project resulting: "The thing that I found determines historical lighting more than anything is the fact that you've got street lighters, on the one hand; you've got tourist people on the other; you've got heritage people on the other. And none of them talk to each other" (LD2). Two of the Heritage Experts (HE1, HE3) also pointed to the importance of inviting different forms of expertise within a placemaking project. One of the Heritage Experts (HE3), for instance, pointed the specific role of management, drawing attention to "the relationship of the local authority and its obligations for health and safety." He believes that it is important to have a suitable and cooperative management team such that they can contend with the following questions: "How does that override the desire of individual owners of a place? Of a space outside their building or, you know, a garden or the floodlighting of the building? How [do] those two work together?" (HE3). One referred to envisioning as a way to take a lighting project forward: "Envisioning is together in a group to think of the future. When you envision, you come together, and you go, 'What if? What if that was brighter? No, I don't like that one. No, there's reasons not to do that one.' […] So we envision this together with a leader like you will be someday, like I am. So we must bring a team together to envision the right site. We have to envision with the local council, with the

heritage association, whatever public entities you have, whoever's managing a university, […] who's taking care of this where we have to bring them in and then we have to bring [in] our cultural planner or historian. Then we bring in our best lighting designers. Then we bring in all the heritage experts" (HE3). Another Lighting Designer (HE6) added that, for designing lighting, there is a need to approach the person or people who is or are "in charge of the building." This Lighting Designer took the view that they are in a position that enables them to have a greater degree of knowledge.

Three of the Heritage Experts (HE1, HE3, HE4) believed that each placemaking project must have a **masterplan to consider all the different aspects of the site** besides the lighting design. One Heritage Expert (HE1) explained this as follows: "Of course they can still have their own identity, but there still has to be some thread that goes through design-wise that ties them together, because they're in one building." By making reference to a masterplan that studies the different aspects beside the lighting design, unnecessary problems can be prevented. In this regard, one of the Heritage Experts (HE4) offered the example of Edinburgh's closes and the fact that, through management, we need to consider how it might be possible to avoid inconveniencing residents: "After one o'clock, it's slightly different, and doesn't attract so much attention. It is something I'm a little bit concerned about. There are only a few closes which the residence would feel strongly about… but listening to their views is terribly important. You don't want to create a problem where there isn't a problem."

One of the Heritage Experts (HE4) offered an interesting opinion on developing **localised lighting strategies**. He espoused the view that strategies should not be developed for lighting historic sites in relation to a placemaking process at the level of a continent or countrywide; rather, each city should develop its own strategy, having due regard to their own sites and considerations. Another Heritage Expert (HE4) was of the same opinion and added the following: "I believe what the city should have is [the ability] to control lighting. They should have permission required and there should be an overall strategy." Another believed that "if there're no overall plan, overall strategy, that, to me, is damaging to authenticity" (HE3).

Three Heritage Experts (HE1, HE2, HE4) also referred to the importance of having **regulations for lighting projects within a city.** They believed that having no regulations

for lightings of spaces within cities would result in each part of the space having its own type of lighting, which may yield an incoherent final result and prevent a sense of place from being cultivated. One considered the specific effects resulting from a lack of regulations: "In Princess street, right now, we have some shops [and] there is no legislation that prevents them from lighting their facade at night, any way they want. And so, you will have one shop that's glowing golden, the other shops are dark, or the other shops are calmer, lighting… different lighting, and there's no regulation over that" (Heritage Expert). He takes the view that, in this situation, even if a monument in the city is lit professionally, the neighbouring lighting emanating from shops in an unregulated manner will preclude a genuine sense of place from arising. He pointed to the specific example of the Scott monument: "It's in competition, visually, with this shop. And at the same time, the art gallery at Christmas, may light […] the top of their building more sparkly, and the hotel has got the dome…" (HE4). She also spoke at a higher level regarding these issues: "There aren't very many regulations on changing the character of a place." One of the Lighting Designers (LD8) also pointed to the importance of regulations: "Who paid was important, but who regulated [is] more important." One of the Heritage Experts (HE1) believed the management of the lighting of historic places in cities should be unified and that there should be control exerted over the lighting of buildings: "I believe what the city should have is [the ability] to control lighting." One of the Lighting Designers (LD1) emphasised that too many statutory regulations for lighting historic environments not only fails to help the designer but also makes more difficult the process of designing lighting with a sense of place: "Why should we just have statutory lighting in a historic environment which is not doing any favours to the buildings?"

7.3.2.2 Authenticity as a matter to consider in transforming a historic space into a historic place

In a significant portion of the interviews, experts pointed to considering authenticity in lighting design as an important matter in transforming a historic space into a historic place. In fact, all groups voiced the opinion that the authenticity of the space must be respected and considered in the context of such a project. As one of the stakeholders put it, "bad lighting schemes can damage the authenticity" (LD4). Authenticity was

referred to by all groups of experts, although they focused in on different aspects of this matter.

The Heritage Expert based in Edinburgh (HE4) gave an example of the actions of the government at one stage to give its historic streets a sense of place. The reasoning was that if the **original design principles are followed**, a better sense of place is likely to result: "We give out grants of government money for people to restore […] original shop fronts. Quite often you find that underneath the cladding, the marble, the timber, you will find remnants of the original. And we believe that it's not so much that we don't want the street to change. We want to force people to go back to something quaint and historic. But what we believe is that the shop fronts were designed to be cohesive. To be read as a row of shop fronts. They all had the same architectural detailing. And we believe that the experience of the place is better when it's following the original design principals" (HE4). One of the other Heritage Experts (HE2) from Isfahan voiced a radically different opinion on this, stating that there is no need to redo the original design principles to make the historic sites better in terms of sense of place; rather, the original and unique lighting designs can be used to engender an attractive site, to be described as living in the present within the historic place.

One of the Lighting Designers (LD2) expressed that, for some specific sites, the goal of **reproducing past lighting** to the greatest possible extent can be an interesting endeavour and produce a unique experience for the visitors: "These places were illuminated in some way by fire or burning torches, or something. But if you really were going to visit […] the ruins of a city […] or a site after dark, make it the only way to see […], almost with a sort of more authentic light. So, you can experience it and get some of what it would've been like to be in this remote area, super dark with very, very little lights" (LD2).

One Heritage Expert in Isfahan (HE2) had a similar idea to this Lighting Designer, stating that lighting should not just copy how the space looked in the past, but rather offer a new experience in current life from the historic site. The Heritage Expert based in Edinburgh (HE4) believed that it is possible for **lighting to recreate how the historic site looked** in the past. In this regard, it is not always the case that something new has to be added, although both can happen: "I think there's room for both. I think that […],

in theory, it would be very nice to understand how a street looked in the past with street lighting that was replicated in some way" (HE4). She gave an example of lighting in some of the streets in Edinburgh: "In this city we have made some replica lights, and we are about to experiment on certain streets with trying to recreate the original. We've looked very carefully at getting the LED lights to be the right colour. We've done research on the old spacing, and we've made authentic replicas of the gas lamp."

Although the majority of the interviewees believed that authenticity must be considered, they also voiced the opinion that the design must not copy that of the past, albeit there were slightly different views offered in this regard. Some believed the new lighting schemes should follow the same functionality of the historic site to retain its authenticity, while others took the view there could be more originality in recreating the site. One individual who did believe that we can recreate the past nevertheless added the following: "People lived differently, and there are new functions. And there were not cars, et cetera. So, I do understand that sometimes we have to have additional lights standards, that you wouldn't be able to recreate a scene" (HE3).

One of the Lighting Designers pointed to the use of **functional lighting** in the past: "I mean, cities were basically towns and historic sites weren't dark. And, in a way, light then had an amazing value, but it was almost a functional value" (LD2). He offered an example of lighting in a church in the 6th century through the use of candles, and explained that, as candles were expensive, only a few were used to light the church. So, although the light would not be especially bright, in comparison to the dark street outside, it would be very bright. He also voiced the view that, today, lighting extends beyond purely functional purposes. One of the Lighting Designers (LD8) pointed out how lighting was only used for functional reasons in the past, voicing the opinion that we need to do more than just light a historic building without telling a story through the light: "Historically speaking, it's a very recent phenomena to light buildings, light monuments, light historic sites. So often previously, apart from in times of events or celebration, places were not lit, they were only lit for functional reasons. So, if we only deliver authentic and functional light to a historic site, I don't think they reveal them properly" (LD8).

One Lighting Designer stated that **historic sites were not in the past lit in a proper manner or to a sufficient extent**: "The way in which historic sites used to be lit was awful really" (LD2). He therefore believes that the modern lighting features are actually very beneficial to historic sites in terms of allowing them to be conceived as places: "With LED, we can miniaturise things [...]. We can now light [...] things much more insightfully and carefully from a very small object that makes very little visual impact. [...] Also our understanding of the importance of conservation, and the way in which we're interpreting has all developed greatly in the last 10 to 20 years" (LD2).

Most of the participants agreed regarding the claim that historic buildings should not be harmed by the presence of **light fittings**. This was viewed as being especially true given the possibilities associated with modern light fixtures. One individual took the following view: "I think, because of the development of modern lighting, they can be extremely small, extremely discrete. You aren't necessarily having to put [in] light fittings that become obvious in [the] historic environment" (LD6) (Figure 7-21).

Figure 7-21: The light fittings in the historical site are similar to those of the streetlights

It is of note that one of the Lighting Designers stated that lighting historic buildings with **electric lighting is not truly authentic**, and installing suitable lighting can lend an authentic feel to the historic place in question: "Given that electric light has only been present really for not much more than 150 years, anything older than 150 years, if it was authentic, would have to be some kind of fire or candle light. So, unless you light every old building in fire or candlelight, you would not be truly authentic, if you like.

But I suppose what I think […] we've done with the projects that we've worked on, historic projects, is to try to deliver some kind of feel of the light which makes it feel authentic" (LD2).

One of the Lighting Designers (LD7) expanded on this view: "It is a different time, it's a different place. So, let us not copy the day." One of the other stakeholders suggested that **lighting should move us forward and into the future** such that it also respects the past: "Lighting should spark the future. Lighting should spark a better place while honouring the UNESCO designation" (LD1). Another Lighting Designer (4) contributed to this position: "It should not duplicate the daytime, absolutely not." She also contributed the following: "[It's] very exciting to be a lighting designer [in] that we can interpret places for their night-time experience. The night is different. It's not bad."

Another Lighting Designer (LD3) took the position that **it is not possible to think of using exactly the same type** and level of lighting as in the past purely for the sake of maintaining authenticity; the majority of buildings, monuments and historic sites actually had no lighting at night: "So often previously, apart from in times of events or celebration, places were not lit, they were only lit for functional reasons. So, if we only deliver authentic and functional light to a historic site, I don't think they reveal them properly." Another Lighting Designer (LD8) also mentioned that "darkness is another thing that is often a good way to experience things authentically, because not everything was lit historically." Another Lighting Designer made the following claim: "Some of these beautiful historic sites, for certain, are more mysterious and […] more beautiful after dark."

One Lighting Designer (LD4) believed that, in relation to authenticity in historic sites, **it should not be the goal to replicate the past**, as that is impossible. She explained that, in the past, places were lit with candles and fire torches, so, unless those are used in the contemporary world, there is a lack of absolute authenticity. She therefore believes that what is important is to deliver the sense of what it would have been like in the past: "If there is any chance of some level of authenticity in the light, […] then fine. But given that electric light has only been present really for not much more than 150 years, anything older than 150 years, if it was authentic, would have to be some kind of fire or candlelight. So, unless you light every old building in fire or candlelight,

you would not be truly authentic, if you like. But I suppose what I think that we've done with the projects that we've worked on, historic projects, is to try to deliver some kind of feel of the light which makes it feel authentic."

One of the Heritage Experts (HE2) put forward that we could use **lighting to influence the authenticity** of the space, but also voiced the view that light cannot change the authenticity of the place: "There's no need to copy the past's lighting to make sure we are keeping authenticity. Light can influence the place, but it won't really change authenticity, so it can be used creatively." At the same time, one Lighting Designer (LD8) took the following view: "What we potentially do to historic buildings, if we are not careful, we not only place a reinterpretation on the meaning, we also place a massive reinterpretation on their authenticity and the detail." He added that although the lighting might be appreciated by visitors such that they regard it as exciting, such lighting might nevertheless be excessively and artificially designed such that it goes against the historic concepts and the traditional characteristics of the building and its history. If this is the case, then **the authenticity is ignored** and the building is framed in a "super artificial" way.

Another (LD1) emphasised that being **authentic means being responsible** in using the light in historic sites. He believes that respecting authenticity can involve not using light to make the historic site look like something totally different: "I think you have to remember to be appropriate. I mean, there is [a] specific responsibility not to make an important historical site look like a fairground. So if you start making important buildings go blue and pink and green for no reason, I mean, fair enough if it's a specific event that you are to celebrate, maybe. But I think that you have to remember to be appropriate and respectful with historic sites. So if you are going to do something which [has] a narrative to it, it has to feel in some way like it has [an] appropriateness about it, rather than just a random idea" (LD1).

Another Lighting Designer put forward the claim that lighting for authenticity does not just mean minimal lighting and lots of dark areas, or fire torches for lighting the historic site. Rather, this designer put forward the view that **it is not appropriate to assume a uniform desire to be authentic with the history of the site**: "If [there is a desire] to be authentic, it should tell more about the story" (LD2). He expanded on this

claim by stating that historic sites have changed in many ways that extend beyond the lighting used. They do not smell like they used to, nor is there the same feel as previously. Many historic buildings have actually changed so much even in their functionality. In this regard, a lighting scheme can actually serve as a tool to help tell the real story of the site, but it does not follow from this that there will always be a need for the 'real' story to be told, in which case, light can be used as a means of telling another story. The Lighting Designer gave the specific example of Edinburgh Castle: "Edinburgh Castle was [the] face of great trauma and great horror for many people. But now people visit it as the place of great celebration, a great positive thing in the city that […] is a symbol [of] Edinburgh. It never used to be." He explains that there is need to use lighting design to depict Edinburgh Castle as a positive and symbolic setting that, in certain ways, masks its authentic history: "So should the lighting scheme tell more about the story? If [there is a desire] to be authentic, it should tell more about the story" (LD2).

As most of the experts interviewed expressed, lighting will influence **intangible authenticity by the interpretation** it lends to the site. One of the Lighting Designers stated that, as soon as a historic site is lit, the interpretation of the designer is imposed: "When illuminating historic sites, we're placing a new interpretation on […] these buildings" (LD5). Another designer voiced a similar opinion in relation to lighting enabling a space to become a place as a result of the interpretation imposed: "As soon as you are lighting a space, you create a place because you are interpreting it, you're selecting certain features" (LD4). One other Lighting Designer believes that, although an interpretation may be imposed, there is still a duty to work responsibly to avoid changing the whole story of the site. Another Lighting Designer (LD3) expressed the view that the key attitude to adopt in respect of putting into place a lighting scheme in a historic site is to have "respect for the building and its environment.".

One of the interviewees with a sociology background (LD5) emphasised several times that with lighting, "[the designer is] **interpreting** space." This participant continued: "And you know, for a social position, we'd be inclined to think a lot about history" (LD5); "If you are lighting old buildings or an old area, it's an act of interpretation" (LD5). This was something all Heritage Experts and Lighting Designers drew attention

to. One gave the following specific example: "So if you think about the way […] it would look [if you lit a building using firelight], compared to how you light it with, say, a white light source, it's a very, very different interpretation obviously" (LD8).

One of the Lighting Designers (LD3) referred to **tangible authenticity** as a matter of some importance in lighting historic sites. He believed that lighting should maintain the identity of the historic building, such that the "clarity of the historic architecture should always be respected" (LD3). He added that lighting should not be used to change the identity of the historic space unless it is necessary to do so, for instance, in the context of a special event: "Masking the nature and identity of a historic building with light is possible but only relevant if there is a specific change of use or a specific event to be celebrated. Poor lighting can certainly disrupt the architectural composition, which is not necessarily a good thing" (LD3). He specified some of the ways that lighting can truly change the historic site: "Disruption of the architectural composition, the colour of light changing the apparent materiality, directionality changing the material texture are all ways of changing the appearance of a building. Projection, particularly dynamic mapping, can really change buildings" (LD5) (Figure 7-22).

Figure 7-22: The reflection of colourful light from shops on the ground in Naghshe-Jahan-Square

One of the Lighting Designers (LD5) mentioned that it is important to consider the **values and the feelings** of the people in the lighting of historic sites if they are to be successfully transformed into a place. He gave an example of an unsuccessful lighting project in Bath, a UNESCO world heritage site in England, in which the values of the space were not considered properly: "…Its whole being is bound up with yellow Cotswold stone. Okay. When [the] LEDs came in, they put in harsh blue. Okay. Everyone just said this is no longer Bath" (LD5).

Another Lighting Designer (LD1) also referred to the **meaning and value** of the historic building in question, regarding this as being one of the most important aspects to consider in lighting. He gave the example of St Paul's Cathedral in London, explaining that, if the meaning of the building were not to be considered, given its importance as a tourist attraction and a historical site, there would be a natural desire to light it up such that it was visible across the London skyline,. However, adopting the viewpoint of, for example, Dean of the Cathedral, it is seen as a place to worship, and so there is also a need to reflect this in terms of the presentation of the site. The designer expanded on his position: "It's not just about tourism. [So] your approach and your attitude towards the lighting of buildings requires a […] tentative reinterpretation to make sure that you don't lose sight of the meaning of the building." The meanings of the historic site are part of its authenticity and therefore fall to be considered as such.

One of the Heritage Experts (HE4) again referred to the **meanings behind the lighting design** as an important and influential factor in developing a sense of place in the historic site: "The narrative of the lighting goes second. What is initially important [are] the meanings within the design."

7.3.3   Theme Three: The Principles of Lighting for Historic Places and its Effects

The third theme identified in the data analysis relates to the lighting of historic places in terms of the effects the lighting scheme has on such historic places. There are three subthemes to consider: first, part of the findings point to the effects of lighting on historic places; second, there are lighting scheme principles that must be considered in lighting historic places; third, there are further suggestions that might be considered in relation to the lighting scheme of a historic site.

7.3.3.1 The effects of lighting in historic places through the placemaking process

All groups of interviewees mentioned their beliefs regarding the effects of lighting historic places in the placemaking process. It is noteworthy that, after pointing to how beneficial lighting can be for historic sites in relation to the process of placemaking, some also referred to how lighting can negatively influence historic sites if not utilised correctly. What is therefore established in the data is that it is not all about just having light within these sites, but having the lighting installed such that it is efficient and well managed. As one of the Lighting Designers (LD4) expressed, lighting historic sites can make them a "better place" in such a way that "honours the place." Another (LD3) emphasised that the lighting scheme designed for historic sites should connect to the history of the place.

The majority of the Lighting Designers, Heritage Experts and even the visitors espoused that lighting historic sites has **economic benefits**. Many of the visitors to Saint-Avit-Sénieur spoke about how the current lighting design has encouraged tourism around the village such that their Airbnb rooms are renting faster than before. The local restaurant owners also reported that they are extending their services into later in the evening, as tourists visit the site at night-time for the lighting. This is in with the Lighting Designers' stating that lighting can "…affect […] tourism in a positive way"

(People FR). The visitors in Isfahan, on the other hand, did not highlight the lighting of Naghshe-Jahan-Square as influencing the economy in any particular way (Figure 7-23).

Figure 7-23: Most visitors observed in Naghshe Jahan were local people engaged in night-time picnicking with their families

Another Lighting Designer (LD7) espoused that lighting historical sites not only has economic and tourism-related benefits, but also has **educational benefits**. Interestingly, many of the people interviewed in Saint-Avit-Sénieur voiced the belief that, after the new lighting installation, they thought more about the history of the site and learned a lot more in comparison to when there was no lighting. One Lighting Designer (LD6) stated matters as follows: "Lighting can help people to retrieve their liaisons with their historical past, especially if it uses its visual narrative as a way to transport people.". Only one Lighting Designer (LD4) believed that a positive lighting scheme would encourage social gatherings at night-time such that there would be increased cultural exchange among different people (Figure 7-24).

Figure 7-24: Many people come to Naghshe-Jahan-Square for cultural or religious programmes

Lighting was also reported as giving rise to **aesthetic enrichment** in historic places. The Heritage Expert based in Edinburgh (HE4) stated that, "in a city that prides itself for its beauty and its culture, the lighting should enhance that." Two other Heritage Experts also believed that lighting design plays an important role in aesthetically enriching places within urban spaces. One of them (HE2) believed that although lighting must be used in this way and it has great potential in this regard, it has not been used in this way in Isfahan, not even within Naghshe-Jahan-Square. One of the Lighting Designers explained that, when a specific historic site is important to the city, lighting can be used for "celebrating the beauty and the quality of these constructions.". He stated that beautification is such an important and valuable aspect for lighting historic sites in that "we have century lighting for beautification, and not necessarily for interpretation or education" (LD3). One Lighting Designer (LD2) also voiced the belief that people's attitudes and aesthetic sensibilities have changed through time, and these also need to be considered in lighting places: "Attitudes on conservation have changed; maybe our aesthetic sensibilities have changed." The majority of the people in Saint-Avit-Sénieur believed lighting in their village has undergone such a transformation in a positive manner: "Isn't that what lighting should actually do?" (People FR). Most of the people in Isfahan offered no comment about lighting having aesthetic benefits (Figure 6-25).

But one of the Heritage Experts (HE3) offered an interesting opinion, stating that the vision of the site at night from a sky-based perspective should also be considered.

Figure 7-25: Historically, the upper rooms above the shops were not lit, but they are now lit with different colours and a quantity of light

The Lighting Designers also referred to how lighting can influence **people's mood and health**, stating that lighting can influence "public health, the body, and the mind" and "light definitely influences mood." One of the Heritage Experts (HE4) added the following: "We have to design recreation places in historic sites at night-time. What I mean is, people, especially in crowded cities, need some places to run away from their daily routines, somewhere to relax, socialise. Historic sites within these cities can function for this purpose. They need a good lighting for this means." One Lighting Designer (LD6) stated that lighting historic sites can enrich people's lives: "[lighting can] visually enrich these places, but also enrich the lives of people at night." In Naghshe-Jahan-Square, some of the visitors expressed feelings regarding some of the places in the city that they feel uncomfortable visiting during night-time, either because they are either not well lit, or the lighting provided is too bright and glaring (Figure 7-26).

Another result of the placemaking process that lighting can contribute to in an important way is **emotional attachment**. One of the Lighting Designers (LD8) expressed the following in relation to this: "The night is romantic. It's poetic." Lighting

can therefore enhance such feelings. The interviewees emphasised that lighting can encourage feelings of emotional connectedness with a site, with one Lighting Designer (LD4) stating that historic sites can be "better loved lit." Another Lighting Designer (LD5) added to this: "People like them, and they expect to see them after dark as well by day." People in Saint-Avit-Sénieur also pointed out that, since the improvement of the site by means of the lighting design, they experience a stronger connection with the place. The majority of the visitors in Isfahan mentioned that they do feel emotional about Naghshe Jahan, being as it is part of their identity, but there were no reports of how the lighting might have affected such attachment, even when asked about this directly.

Figure 7-26: The front of the shops are very bright in comparison with the square's landscape, resulting in a lack of balance

Several of the Lighting Designers and Heritage Experts highlighted the importance of lighting creativity giving rise to a **new experience** of the place at night in comparison with that of the daytime: "I prefer to offer something different, especially in nightscapes, façades, etc. You have the whole day to take profit of a kind of experience. Why not offer a different experience during the night? In addition, it is important to inform the brain that you are in a different period" (LD1). Another Lighting Designer (LD4) offered the following appraisal: "By night you can choose which element you want to reveal or which story you want to tell. By day, of course,

you only have one light source in the sky, and it makes everything seen the same way."

One Heritage Expert (HE2) put forward the view that "lighting should not only make the space attractive, but it should [also] provide an original experience of the space for people.". The people in Saint-Avit-Sénieur voiced the opinion that the lighting scheme has given them a different experience of the place at night in comparison with the same place during the daytime (Figure 7-27).

Figure 7-27: The Saint-Avit-Sénieur experience at night

Other benefits lighting can give rise to for a historic site within the placemaking process involve illustrating them through the night as well as the day, as they are **landmarks of the city**, and "because they are a landmark and […] people like them, and they expect to see them after dark as well by day" (LD4). Lighting "honours the place" as one of the Lighting Designers argued, as "heritage sites […] are unique and therefore they are the gems of our civilised planet" (LD4). Another Lighting Designer (LD5) stated that, as part of a placemaking process, lighting can "draw attention to a building as a landmark."

Another Lighting Designer (LD7) believed that lighting can assist with **attracting attention** to historic sites: "Bringing attention to historic buildings can make them more recognised and better loved. [And] lit buildings attract less damage and graffiti in some cultures." Another Lighting Designer (LD6) also stated that lighting can attract attention in a manner that is reflective of the importance of the historic site to people:

"In a sense, […] by drawing attention to something, you sort of reveal it […] You remind people of its significance." One of the Heritage Experts (HE2) spoke about how light, together with other forms of art, can result in increased levels of attention regarding heritage amongst people. He also stated that such endeavours can serve as a means of reducing antisocial behaviour: "Because I am an architect, and I'm interested in engaging people more with their heritage, I think there are ways to use light to do that. [We've] had a lot of success using art alongside conservation to draw more people […] and […] by drawing more people to the area, obviously, you're getting people more interested in it, but, as well as that, you're reducing anti-social behaviour" (HE2). Many people interviewed in Saint-Avit-Sénieur mentioned that they think they have been attracted to visiting the site to a greater extent than before, and they also believe that they see more people from different places coming to see the site too. No-one in Naghshe-Jahan-Square voiced any opinion regarding the lighting of the site and how it might have resulted in greater number of people being attracted.

7.3.3.2 Lighting design considerations for historic places

This subtheme is concerned with the findings that pertain to the aspects of lighting design that should be considered for historic sites. There are various matters that the Heritage Experts and Lighting Designers highlighted, with these being supported both by the observations and by the interviews conducted within both case studies (Figure 7-28).

Figure 7-28: Lighting in Naghshe-Jahan-Square

One of the points that most of the interviewees drew attention to was that lighting can be used to construct a narrative in the historic site. One voiced the opinion that light can be used to interpret a specific poem and **amplify a narrative** within the space (Figure 7-29): "There may be a poem; there may be a poem in your literature that talks about this place. I bet there is a story or a legend. If there is a legend that talks about this place, you could use that as a basis of your lighting time [and] amplify the narrative. [...] Maybe there's some visions in this legend. Maybe there's [...] a story that includes this place" (LD5). The Heritage Expert in Edinburgh also said lighting has significant potential for "providing narrative and drama."

Figure 7-29: Poems about the history of the site on the walls of Saint-Avit-Sénieur

One of the Heritage Experts in Isfahan (HE1) believed the lighting scheme must tell the narrative of the historic site. She expanded on this point, adding that other element such as sound can be used in furtherance of this goal. The other Heritage Expert (EH2) did not point to amplifying the narrative but did state that the lighting should amplify the meanings associated with it.

The majority of the interviewees in Saint-Avit-Sénieur stated that they were very happy with the fact that the lighting scheme in the historic site was underpinned by a narrative (Figure 7-30). The people in Isfahan, meanwhile, stated that they would like

Naghshe Jahan's lighting scheme to have a story as well, taking the view that, currently, it is underpinned by no such narrative or story whatsoever. Interestingly, the people interviewed voiced their belief that the site has such a rich culture and each of the historic buildings include lots of interesting stories within their history, with many of these being familiar only to the elderly or other locals. They therefore expressed that it would be very beneficial for the site and the people who visit the site to be enabled to become familiar with these stories. Across both sites, few people mentioned that the use of sound in addition to light would assist with telling a story such that this would increase the interest of visitors to the site.

Figure 7-30: Telling the history of the site and the village with light

One Lighting Designer (LD8) stated the following: "Here is an element of […] storytelling which can come with light. [You can then] in a way interpret the space in a slightly different way. So, light can do this, I'm not sure it always has to do this, but light has the ability to help tell stories." One other Lighting Designer (LD3) said that lighting can be used in various ways to **create different stories**: "So there are many layers of lighting that have to combine. I think the most interesting thing [is] about what you can do with lighting, because obviously it's a sort of software, not hardware, is the way in which you can combine different lightings to create a number of different ways of saying things. […] And we can tell our stories."

Another point that needs to be taken into account is that **lighting builds interpretations**. One of the Heritage Experts (HE2) explained that lighting is used within urban spaces to convey a specific interpretation to people: "When we light up a street towards Naghshe-Jahan-Square and we don't light another street as bright, we want you to go through this street and not the other. We are interpreting through light our aims, our thoughts." Another of the Lighting Experts (LD5) stated the following: "Any lighting you put in the site is an interpretation. It is de facto. […] It is a fact. You turn on a light. Listen, you have a light pole, the ugliest light pole in the world, super tall in this square, and I saw them already. You turn that on. You have interpreted the site right that moment you just said; this is what the light pole is saying. [The] light pole is saying that area is important […] You say that's the most important place; you can feel safe here. I've interpreted this. It's safe here. It's important. [It's] for you." One of the other Lighting Designers also spoke about lighting conveying certain interpretations, and explained how these **interpretations add value to specific features** and places: "As soon as you are lighting a space, you create a place because you are interpreting it, you're selecting certain features. Again, usually in relation to value, some kind of value. Even if you are just lighting in a purely technical way according to standards, that's a value system." This Lighting Designer also added the following: "Whether it's historic space or just public space, when you light something, you are interpreting it." He again referred to how lighting interprets values: "You're making statements about what is valued by people, what's valued by different people, and what is valued… you're interpreting at me" (LD1).

Another Lighting Designer also mentioned that lighting for night-time can be used for new interpretations: "You can interpret the site in a new way, it's not daytime" (LD2). One of the Heritage Experts explained how efficient and **successful lighting can be used to create interpretation** and tell a narrative in a different way to other design methods: "In terms of interpreting, I think, you get for a small amount of cost [for] fittings and fixtures, you can actually get a great deal of effect. To have the same effect in the daytime, you would have to paint all the buildings different colours, or you would have to intervene quite a lot. And the good thing is that it's reversible. You can change the [setup] in the future very easily. […] So if you want to tell one story, right now, you can change the story that you want to tell later."

One of the other matters that the Heritage Experts (HE4) drew attention to was that **lighting should create an atmosphere** (Figure 7-31). One stated that lighting should be used to "enhance the atmosphere of the built environment and change the nature of the place.".

One of the Heritage Experts also put forward that one of the main reason for lighting historic sites as a space for people to visit at night is to provide a new experience of the space, with this not being possible unless the lighting creates a new atmosphere. He added that lighting should "enhance the atmosphere of the built environment and change the nature of the place" (HE2). Another Heritage Expert (HE3) contributed further to this idea: "By creating a good atmosphere with light at night, we can [transmit] information to visitors." The third Heritage (HE4) Expert also commented on this: "Edinburgh World Heritage [have] for some years [been] trying to work with the city council street lighting department to change their attitude towards street lighting from one of health and safety to one of enhancement in terms of creating the best view of the buildings and creating the right atmosphere."

Figure 7-31: Saint-Avit-Sénieur, creating atmosphere with light, resulting in greater engagement with the site by people

One of the Lighting Designers (LD7) highlighted an interesting point regarding what a good lighting scheme must involved: it is not always beneficial to light up all the historic places and sites within a city as a means of displaying them with overt pride.

Rather, light can be used more cleverly in specific places to **allow people to discover things** by themselves. He raised the specific importance of "the quantity of light, as well as the way in which it [is supplied]". He also stated the following: "Many historic sites, externally, traditionally, […] are very strongly lit. […] Sometimes they're trying to draw attention to a building as a landmark […] especially a city that has a lot of competition, [with] many historic buildings. Sometimes it's nice for people to sort of discover things. As opposed to waving at them, you know […] from a great distance. […] And so, for me, with a lot of historic cities, sometimes the lighting is too much, where that sort of element of surprise and delight [is] lost by the way in which the illumination [is] carried out" (LD7). Another Lighting Designer (LD4) took a similar approach in terms of how light should be used to illuminate a historic building, stating that we can **emphasise specific parts of the building**: "We will accentuate [a specific part of the building] if we light this up. It brings importance. It brings respect. If we light this up, it brings importance. If we don't light this up, we've decided it's not so important. So, you're going to create a *scenography.*" One of the Heritage Experts (HE3) had a similar opinion, while another Lighting Designer submitted the following: "Pick out historic features with the lighting, that [are] less prominent during the day, so you [are] creating a totally different scene" (LD4) (Figures 7-32 and 7-33).

Figure 7-32: Minarets are at the centre of mosques' identities, and have some special iconic details and characters. However, in Naghshe-Jahan-Square, they are lit using floodlighting without any emphasis being placed on those details.

Figure 7-33: In Saint-Avit-Sénieur, the lighting scheme is set up with a view to emphasising certain parts of the building, such as the corners, entrances and windows

Another Lighting Designer viewed this practice as creating layers in architectural sites to enhance placemaking: "In the old lighting design, [...] we are enhancing architecture. This is what everybody says: 'Turn out the lights, it's night-time. Enhance the architecture. Make the architecture look great at night.' I don't agree. I mean, as a provocateur, as a controversy, I [think] maybe, actually it's more interesting if we enhance certain parts of the architecture. Maybe we should only enhance the doorway, if it's open at night. Maybe we should only enhance certain areas, given the placemaking of that architecture. So, I think that lighting is a great opportunity to create layers, add the layers on placemaking" (LD2).

One of the goals that should be adopted in respect of constructing lighting for a site is that of making it more attractive and exciting, according to the interview data. One of the Lighting Designers (LD1) stated that lighting can make a place "**exciting and attractive at night.**" Many people in Naghshe-Jahan-Square mentioned that they think the current lighting is frankly boring and does not contribute anything interesting to the space. Some mentioned they would like to see the lighting being used to add excitement to the experience associated with the historic site: "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?" (People IR). 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" (People IR).

Some of the interviewees from Saint-Avit-Sénieur, on the other hand, took the view that the lighting scheme has made their site much more attractive and exciting during the night in comparison to the site of the past: "We love the site anyway, but I can't hesitate [in stating] that one of the reasons we come here at night is how exciting it looks now with the lighting" (People FR). Another interviewee stated the following: "I can have a great vision of this historic site during the day if I like, a lot better than at night-time, but what brings us here as a family at night now is how attractive it looks with the new lighting. It really excites my kids, as well as us of course" (People FR) (Figure 7-34). The Heritage Expert in Edinburgh stated that lighting must "create something that makes people want to go to a space or want to use that route."
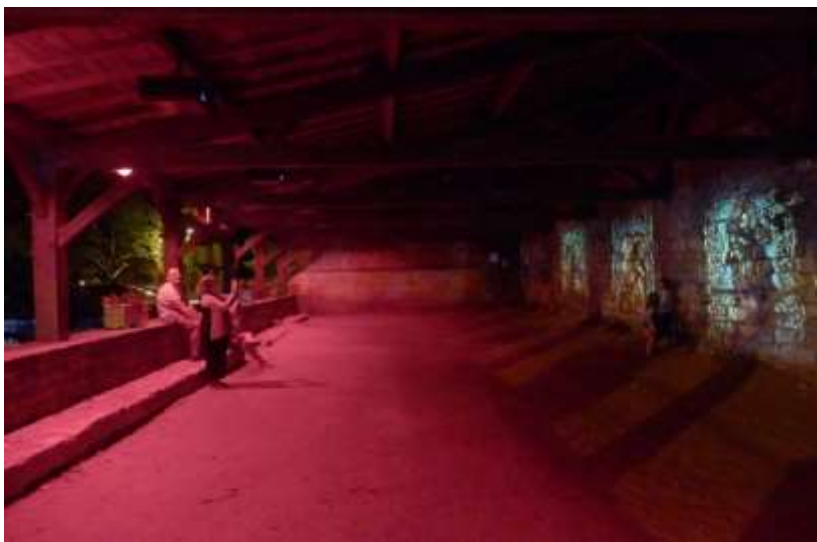
Figure 7-34: People in Saint-Avit-Sénieur

One of the important matters highlighted in the interviews was that the lighting design should be **site-specific in terms of considering the meanings and values within the**

site. One of the Lighting Designers (LD7) raised the specific claim that we should have "awareness of meanings before designing." One Heritage Expert (HE1) also submitted that meanings that are carried within a place should be considered in a serious manner so that they can be reflected in the placemaking project, whether through lighting design or some other means. Another Heritage Expert (HE4) also took the view that the meanings within places should be considered in the process of placemaking: "People love their spaces. And they have real meaning to them. And I think […] the temporary events that take place should be [conducted] to try and reflect those." Another Lighting Designer (LD3) referred to this as creating a vocabulary of lighting that is site-specific. For instance, if a site is historic, the history of the site should be taken into account. If it is a public space that is not historic, there is a need to study what that site has within it to consider these factors within the context of the design process. Some of the people in Naghshe Jahan pointed to the lights coming from shop windows, stating that too much light emanates from these shops, giving rise to an unpleasant sight. They pointed out their belief that Naghshe-Jahan-Square is foremost a historic site rather than a shopping centre, and that the excessive brightness of the shops serves to cheapen the historic values of the site. It is striking to note that, as a result of the poor lighting of the landscape, some were seen sitting nearer the shops so that they could make use of the lighting (Figure 7-35).

One of the Lighting Designers (LD4) highlighted that lighting designers should follow the intentions associated with other design features of the space. She refers to this as mirroring: "So if you have a landscape architect that's going to put a certain kind of stone on the paving because of a certain meaning of that stone in that place, lighting should do the same. So, we are mirroring, we are mirroring the intent of the urban designer and landscape architect". One of the Lighting Designers (LD6) also stated that "lighting is about material culture," and that "it's about how a culture of how the material represents our values, ideas, and so on." This indicates that the cultural values of the people should be considered. The people interviewed in both Naghshe Jahan and Saint-Avit-Sénieur showed interest in considering cultural values of their historic sites in the lighting of these sites. There were also people from both sides who stated that they like seeing traditional patterns used in the lighting schemes of their historic sites, with these patterns serving to highlight relevant features of the culture.

Figure 7-35: Visitors sit close to the shops to make use of the light as the square is not efficiently lit

It was mentioned by different interviewees that it is important not only to study the target place, but also **what surrounds the target site**. One of the Lighting Designers (LD8) explained that when designing a lighting scheme for a square, there is also a need to study the surrounding streets and paths, as people will need to pass along these paths to reach the target site. If the streets are dark and not lit sufficiently, the project will fail. Within the context of the placemaking process, it is necessary to think about which streets are to be used by pedestrians. One of the Heritage Experts (HE4) provided the example of the closes around the Royal Mile in Edinburgh, and added that it is necessary to consider which paths and closes it would be desirable for people to use to reach the place. It would be undesirable for "hundreds of tourists coming down these closes at three in the morning to […] disturb the residents who live there" (Heritage Expert). One of the Lighting Designers explained that the context in which the historic building is situated should be considered in the design process: "A single historic building surrounded by modern buildings should certainly be differentiated from them in [the] lighting approach [adopted]; in a city composed of many historic buildings, differentiation should be meaningful and coherent."

In the interviews with people in Naghshe-Jahan-Square, the majority stated that they came to the square through the main two streets as opposed to the narrower, older streets (Figure 7-36). When they were asked why they chose the main streets, they

replied with the following: "The other ones are too dark and spooky"; "There's no access with vehicles, you have to walk a long distance and you may even get lost, which is not what you fancy during the dark" (People IR).

Figure 7-36: Pedestrian path to the square, lit up only by the light coming from the nearby shops

In relation to the area around the target site, it was also mentioned by one of the Heritage Experts (HE3) that the functionality of this area needs to be considered: "We need to know exactly what is surrounding the site. Say, if the site is historic, is it surrounded with handicraft shops? restaurants? Greenery? These need to be studied so we know what we need to consider within the site as well."

Providing safety was also mentioned by the majority of the interviewees as a significant matter in relation to the matter of lighting at a more general level. One of the Heritage Experts (HE1) mentioned, that apart from making urban spaces safer as a matter of fact, it must also make people *feel* safer. One of the Lighting Designers (LD5) raised the point that, if criminal activities occur within a space, or the ground is uneven due to the presence of, for example, potholes, there will be a feeling associated with a lack of safety anyway. Many participants across both sites also referred to this aim underpinning lighting: "As well as that, you're reducing anti-social behaviour" (LD4). An interviewee in Isfahan 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!" (People IR). One of the Heritage Experts (HE1) working within the management of Naghshe-Jahan-Square stated that the historic sites must be open at nights for free access by people, with this being one of the management decisions for turning the space into a place at night. A sufficient lighting scheme is therefore required to provide a suitable base for this to happen.

As already mentioned in relation to the placemaking theme, many of the female interviewees in Naghshe-Jahan-Square believed the lighting of such historic places must consider matters in a **gender-informed manner**. They voiced their belief that, currently, the lighting on this site is designed for men, with several of the places being too dark such that there is a lack of a feeling of safety. They mentioned that they prefer a lighting scheme that facilitates improved vision, yielding an increased sense of safety: "The feeling of safety will come from getting rid of the dark corners and things like that. You can't use traditional lighting to do that. So, you have to use modern lighting and modern techniques" (HE2).

Considering the **activities that take place in the historic site** was another matter referred to by different groups. One Lighting Designer (LD1) voiced the belief that a bad lighting scheme fails to reflect the activities that will be engaged in on the site in question. Some of the Lighting Designers also stated that special events within the city are other activities that may inform the practice of lighting historic sites. This is what some of the people, especially in Naghshe-Jahan-Square, referred to. They 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 7-37). Interestingly, many participants were totally against the use of this historic site for political ceremonies, believing that this site's status meant that it should not be used for political purposes.

Figure 7-37: Events are held in Naghshe-Jahan-Square, such as story nights for children

One of the activities mentioned by participants within Naghshe-Jahan-Square related to people picnicking in the landscape of the site between sunset and midnight (Figure 7-38). People come mainly with their families and visit other relatives, all gathering together for a few hours of picnicking. Many people can be seen playing badminton with other family members. These families seek to sit near one of the lamps to gain access to light. However, many were seen to cover the light with clothing or bags, as discussed previously. When they were asked why they did this, they referred primarily to the need to reduce glare. One Lighting Designer (LD3) stated that, in engaging in lighting design within the context of a placemaking process, it is necessary to strike a balance between the different elements and determine their significance in relation to the activities that take place within the site.

Figure 7-38: The lighting scheme for Naghshe-Jahan-Square is not set up such that it facilitates the traditional activity of picnicking

7.3.3.3 Lighting design characteristics for historic sites

One further subtheme highlighted related to the characteristics of lighting for historic sites, with this tending to be raised by the Lighting Designers, albeit it was also raised in the opinions of the visitors to the sites. The observations pertaining to Naghshe-Jahan-Square were especially helpful in relation to explaining why certain characteristics are raised as important matters to consider. In terms of light characteristics, both the quality and the quantity of light were matters referred to. Some of the Lighting Designers listed some of the ways in which light can be used to affect the space, making reference to the colouring of the space, giving texture to parts of the space by means of light, giving the space perspective, and making some things visible and others less visible. The colour quantity, direction and location of the lighting installations were also mentioned. One Lighting Designer (LD2) added the following characteristics: "Intensity, direction, colour temperature, colour rendition, contrast, mutability." Another (LD6) submitted the following: "You can make interesting shadows, you can make textures, you can make colours…". Light colour was also something both groups of people in Isfahan and Saint-Avit-Sénieur highlighted. Most of them mentioned that they preferred warm colours over light colours. The people in Saint-Avit-Sénieur were particularly fond of yellow, blue, purple and red; the people in Iran yellow, white, green and blue.

Although the findings highlighted some of these characteristics as influential features of light in historic sites, most of the data collected suggests that there cannot be set regulations on these having regard to the fact that, based on the historic site, its architectural features, the context and the culture of the region, these characteristics change. One Lighting Designer (LD2) flagged up the relevance of other characteristics but also took the view that, based on the situation, all these can be important in different ways but should always be used in an appropriate manner: "Colour rendering, intensity, colour temperature […] These are all kind of pieces of the puzzle, let's say, when you work with light. But I can't say that there's one particular thing that's more important than the other, you have to be able to use all of these things properly" (Figure 7-39).

Figure 7-39: Lighting characteristics in Naghshe-Jahan-Square

One of the beliefs mentioned especially frequently was that **lighting can be malleable**: "We can change brightness. We can change the tone. We can change the colour. We can change the pattern" (LD4). This characteristic was counted as a beneficial aspect of modern lighting features that could be used in historic sites, making it possible to change the lighting design over time or for special occasions, with this being an option without the need to change the lighting features arising. Many of the people in Saint-Avit-Sénieur interviewed also mentioned that they appreciate the fact that, every now and then, the lighting of the site changes: "It makes you look forward to seeing something new in the next visit"; "It keeps you coming back." Some of the people in Naghshe-Jahan-Square put forward their belief that it would be nice to have some

change in the lightings, with one saying "It would be nice to see some change in the lighting."

One of the characteristics mentioned by many of the people interviewed in Naghshe-Jahan-Square mentioned that they are less appreciative of the lighting when it is arranged in a **uniform fashion**: "The uniformity in lighting here makes me feel there is no design [to] it. It's just lights to make [the site] visible"; "I think it's boring, there's no excitement, no focus." One of the Heritage Experts based in Edinburgh mentioned that this concern must be considered relative to the specific needs of the site in question: "I think different styles are needed in different places. The new town [in Edinburgh City Centre] is a place of uniformity" (Figure 7-40). One of the Lighting Designers (LD8) described the use of floodlighting as a bad choice for historic buildings: "Bad lighting is usually **old fashioned flood lighting**, using either very cold or very warm light sources. This might [illuminate] a building but [it] is likely to **lose its character and materiality**" (Figure 7-41).

Figure 7-40: Uniformity in lighting

Figure 7-41: Floodlighting causes the uniqueness associated with the Royal Mosque (realised through its architectural features and details) to disappear

Harmony was highlighted as another factor that the Lighting Designers pointed out as being relevant to consider within the designing of lighting schemes. One voiced (LD6) his opinion that the lighting design must have harmony with the historic site to the greatest extent possible. Another Lighting Designer (LD2) explained that the concept of harmony of lighting in relation to historic places means that the light should not contrast with the site, whether in terms of the characteristics of the light or the narratives it brings to the site. Another explained (LD4) that harmony means that the lighting should consider the meanings and architectural characteristics of the site. One of the Heritage Experts (HE4) submitted the following: "All the design elements must have harmony together to build a great place. So, the architecture, the materials used, the colours, the light, they should all be relevant and in harmony. […] This doesn't necessarily mean using the exact same colours for instance, but even if different colours are used, they should not destroy the harmony and visual aspects of the architecture."

The majority of the people in Isfahan 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 7-42 and 7-43). This is an especially important matter to consider in Naghshe-Jahan-Square. 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" (People IR).

Figure 7-42: Glare from lighting in Naghshe-Jahan-Square

Figure 7-43: People covering the lighting feature with children's clothing as a means of reducing glare

Most of the Lighting Designers, in discussing **light quantity**, regarded higher levels of light as often being inappropriate: "I think a really important thing to think about is the quantity of the light, as well as the way in which it is supplied. And for me, many historic sites, externally, traditionally, particularly during the nineties, the post-war period when they start […] floodlighting buildings, you know, in the 1960s, 70s, and 80s. Many of these historic buildings were absolutely massively [ruined], I mean, they'd look ridiculous. And so, and you see this in cities, things are very strongly lit. […] Sometimes they're trying to draw attention to a building as a landmark" (LD1); "For me, with a lot of historic cities, sometimes the lighting is too much. Where that sort of element of surprise and delight [is] lost by the way in which the illumination [is] carried out" (LD5). One Lighting Designer (LD7) also expanded on these concerns with the following complaint: "We are sometimes confronted with projects where the expectation is to make things very strong and very bright to show that it's an affluent society." Another added that, as a Lighting Designer (LD6), there is sometimes a need to reduce the level of the light such that there is more selectivity about what is illuminated. The people in Naghshe-Jahan-Square, on the other hand, mostly complained about the square not being lit to an adequate extent, raising concerns relating to both poor vision and a lack of security.

Another characteristic raised as being problematic was the use of lighting such that this results in **excessive theatricality**. One Lighting Designer (LD3) referred to this as a common problem, framing this as "**excessive use of colour or dynamic lighting**" (Figure 7-44). One Lighting Designer (LD7) also raised the view that, in dealing with ruins of buildings, if lots of colours are used and there are dramatic changes in the levels of light, this can result in excessive theatricality, which "often **destroys any sense or place**". He believes that this is because people have seen these places in daytime, and so the sense of place is vulnerable to being ruined by the overly dramatic changes that arise from lighting schemes used during the night. Tourists, of course, may appreciate such displays of light, especially when this is accompanied by music as part of a show. However, such displays serve to completely change the character of the site in question. Another Lighting Designer (LD8) voiced a similar opinion, stating that "the colour of light [changes] the apparent materiality." Another Lighting Designer (LD2) explained what is involved in using light in a theatrical manner, taking the view

that lighting has the potential to "**completely change the identity, character and expression of [the] building.**". He expanded on this belief: "Just as in the world of theatre, you can tell a story … you can do all sorts of crazy things." However, he believes that the lighting designer must exercise responsibility in making use of his abilities such that the overall outcome is considered to an adequate extent, with this ultimately relating to "whether you are doing the right thing or the wrong thing"; "You can create something really beautiful, exciting and interesting and people love it. And there's nothing wrong with that whatsoever. Not everything has to be totally stretched out all the time. But at the same time, of course, you know, when you are lighting a historic building, you are absolutely changing the identity". Expanding on this position, one Lighting Designer (LD3) submitted the following: "Each building and space has a unique character and identity, when we add new features to the building or space, such as colour, light, texture […] We present the space [as] a new version, different to its past" (Figure 7-44).

Figure 7-44: Saint-Avit-Sénieur, the identity of which site people expressed as being strongly influenced by the lighting scheme

Two of the Heritage Experts (HE2, HE4) with architectural backgrounds were strongly against the use of excessively high levels of colours, textures and moving lights within historic sites: "Using too much light in [fantastical] ways not only doesn't help in the placemaking process, it actually demolishes the true sense of place within historic

sites" (HE2). Another Heritage Expert (HE4) added the following: "You can always do those colourful and theatrical lighting designs on any normal building; you really don't need a historic site which already has lots to say itself. That is bad lighting, [it is] the wrong use of light on the wrong site."

Control was another specification of light mentioned in the interviews. One Lighting Designer (LD4) took the view that, with light, you have control on what you light, and how you light it. She pointed to the controllable aspect of the intensity emitted by lighting schemes, together with the sequence and the manner in which lights can be turned on and off. Another suggested that having control over light could be used in historic sites, especially when there is a need to do so to reflect the needs of special occasions.

Figure 7-45: Visitors expressed that the shops are too bright for this to reflect the atmosphere associated with the historic site.

Chapter Eight: Interpretation and Discussion

8.1 Introduction

The ethnography data collection method used for this research provides a basis for making design recommendations through placemaking processes in relation to the lighting design of historic sites. This chapter addresses the research question as introduced in Chapter One : "**What are the design principles for lighting historic sites in the placemaking process?**" by drawing together the findings of this research and the interpretations available given the findings of the extant literature. Through considering the two case studies, certain notable lighting-related features of the best practice site are identified such that a useful comparison with Naghshe-Jahan-Square can then be drawn. This information is supplemented using the findings from the interviews and questionnaires for both sites, as well as those conducted in respect of the Heritage Experts and Lighting Designers.

Given the thematic analysis, this chapter presents the interpretations and discussions for each of the themes and their subthemes. Accordingly, it starts with Theme One: Placemaking: Benefits and driver, with subthemes: 1)the benefits of placemaking process and 2) People's roles as a vital aspect of placemaking. Then it moves onto the interpretations and discussion of Theme Two: Historic Site as the medium for placemaking. The two subthemes discussed here include 1) three essential aspects of management to consider for placemaking in historic places, and 2) considering authenticity in the lighting of historic sites in placemaking. Finally, the third section presents the interpretation and discussion on Theme Three: The Principles of Lighting for Historic Places. The three sub-themes discussed under this heading include 1) the effects of lighting in historic places through placemaking, 2) lighting design considerations for historic sites in the placemaking process, and 3) considering essential characteristics of light for historical sites in the placemaking process. Finally, the conclusions of the study are formulated so as to answer the research sub-questions.

8.2 Interpretation and Discussion on Theme One: Placemaking: Benefits and Drivers

8.2.1 The benefits of the placemaking process

One of the important results obtained through thematic analysis of the data was Subtheme One, which introduced the benefits resulting from turning a space to place. Some of the benefits identified in this research related to encouraging social engagement amongst people, the space gaining meaning and value as a result of turning into a place, and amplifying identity. Visual enrichment and economic benefits were also identified as relevant considerations. The literature on placemaking makes it clear that placemaking is more than just designing spaces, also comprising the aim of improving the community in various ways, relating to both social and economic matters. As accounts such as Low and Altman (1992), Sime (1986), Rapaport (1990) and Relph (1976) emphasise, places comprise more than just the physical features of a space and include individuals' psychological connections to the place, together with the activities provided and the meanings of the space. McCormick (2018) also stresses that social, economic and cultural improvements in urban spaces are associated with a better quality of life. So, by comparing the findings of this research with the literature, it emerges that those aspects regarded as the results of placemaking identified through this study have the potential to contribute to an improved quality of life.

8.2.1.1 Social engagement as a result of placemaking

Encouraging social engagement among people emerges as one of the most valuable of the benefits to be found among the findings. Some of the interviewees also referred to social health or social wellbeing as resulting from placemaking. 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. In the 1960s, Jacobs focused on promoting social activities for lively neighbourhoods and Whyte engaged in research investigating social engagement in public spaces and the associated positive influences this has on quality of life. Zielinska-Dabkowska and Xavia (2018) also suggest that, nowadays, heritage sites are coming to be known as socialising destinations not only for daytime activities, but also - and especially - night-time social engagement.

The Heritage Experts and Lighting Designers consulted in this research emphasised that, for each urban space within the city, it served as a destination for social engagement unless the site is transformed into a place. Project for Public Spaces (PPS), which, as a project, has worked on significant numbers of placemaking projects, also count social engagement opportunities within the public space as one of the four components making a project successful. They explain that, while it is a difficult task to provide social engagement opportunities in designing urban spaces, achieving this goal is vital and will result in a sense of place as well as a sense of attachment to the place among the community. Thus, while the findings of the current study refer to social engagement opportunities as a result of turning a space to place, PPS refer to social engagement as facilitating a space turning into a place. Canter (1979) and Cross (2001) also point to this journey in terms of this direction, explaining 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 from the best practice site support the other findings and the literature in terms of this relationship. Notwithstanding that Saint-Avit-Sénieur as a village has a history of falling into neglect with a reduced population, many of the visitors consulted took the view that this site has turned into a place for them to engage in social gatherings, with the installation of the lighting scheme having had no small part to play in this. The Lighting Designers emphasised that the local community and residents around the site are especially important in this regard. The results for Naghshe-Jahan-Square reveal that this historic site also serves as one of the most important sites for social gatherings in the city. However, unlike that identified for the best practice site, the lighting of this site was not identified as having a positive impact on the social engagement occurring within the site.

8.2.1.2 Placemaking results in gains in both meaning and value

Gains in both meaning and value constitute another result to be identified in relation to the benefits of turning spaces to places in this research. 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 Najafi and Shariff (2011), feeling a sense of place is identified through people's feelings about the place and the values and meanings it has for them. So, similar to what was found through the interviews with the experts, without meanings, spaces cannot turn into places.

According to Relph's (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. The two case studies considered within this research serve to highlight this. In Saint-Avit-Sénieur, physical features - these being the historic site with its new lighting scheme - have allowed for a best practice site to emerge. In addition, the lighting features have allowed various activities to take place within the site during the dark, including social gatherings, organised night-time walks during the summer nights, and the opening of local restaurants and shops around the site. Furthermore, the lighting scheme has been built such that it reflects the history and values of the site. This becomes evident through considering the data elicited within the interviews with the local people. These three elements have all been successfully drawn upon so as to turn the space into a place.

8.2.1.3   Placemaking amplifies identity

One further benefit of turning a space into a place is that it amplifies identity. 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, citing identity as a particularly central factor to experiencing a place.

8.2.1.4   Placemaking results in visual enrichment

The findings of this research suggest that transforming a space into a place can serve to enhance its visual attractiveness. 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. Also, as Gokhale (2010) explains, designers should consider visual aspects, in addition to more functional aspects, to improve the quality of life in the city. Lighting schemes are one of the important tools that can provide significant benefits by enhancing the aesthetic value and perception of the urban spaces. This is especially visible in the best practice case study, where, according to the data elicited within the contexts of the observations and interviews with the visitors, the site has become far more appealing and attractive to the visitors as a result of the installation of the lighting scheme. In relation to Naghshe-Jahan-Square, not only does the lighting fail to beautify the site at night, but the flood lighting 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.

8.2.1.5 Placemaking results in economic development

Economic benefits also constitute a central aspect of the finding of this research, having regard to the interviews and the features of the best practice site. While the population of Saint-Avit-Seniéur was once decreasing, after the lighting scheme plan was formulated, the majority of the locals witnessed a dramatic improvement to the village in economic terms, especially in relation to the local restaurants and shops around the site at night-time. One particularly significant way in which this was reflected was in the increased Airbnb reservations resulting from people staying in the village so that they could visit the site. Economic benefits were also raised by each of the Heritage Experts, with the same being true of some of the lighting designers, particularly in relation to the process of placemaking. Vazquez (2012) also lists economic benefits as a potential outcome of placemaking. Other studies that are concerned with urban regeneration projects, such as Litchfield (2000), Roberts and Sykes (2000) 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.

8.2.2   People's roles as a vital aspect of placemaking

The findings of this research make plain the importance of the role of people in the placemaking process, suggesting that people's roles must be taken into account in two different ways: firstly, by considering their requirements; and, secondly, by engaging them in the process.

Initially, it is important to study both *who* is using the site and *how* it is to be used by those people. In terms of the users, every site may have specific groups of people coming to it more often. For instance, in a European context, dog walkers often form a significant body of potential visitors; in Naghshe-Jahan-Square, on the other hand, there are no animals allowed. In both case studies, many people were seen to come to the sites with their family, so a range of different ages - from the elderly to children - were observed on both sites. According to the findings from Saint-Avit-Seniéur, the lighting scheme serves as an attraction for children as well as adults, and the former group were observed to play and interact with the features. In Naghshe-Jahan-Square, many children were observed, either playing ball games or even swimming in the pool, with it seeming that the physical features of the big pool or the grassy spaces were encouraging these activities. Project for Public Spaces (2007) count sociability as one of the four qualities of successful public spaces. One further requirement that should be met is the need to consider who uses these spaces, together with the matter of considering how those groups' needs can be satisfied.

Another important matter in terms of the groups of users to be considered in placemaking is striking a balance between meeting the needs of local people versus those of tourists. On the one hand, it emerges from the results obtained in this research that a successful placemaking process provides many economic benefits and even cultural exchange by attracting tourists to a site. This is especially true in the case of the best practice site, with many of the locals even expressing positive appraisals of the local tourism in connection with the lighting plan installation. Many of the participants voiced that the project has attracted greater levels of tourists, with this giving rise to economic improvement and an increased sense of life within the village.

On the other hand, many of the experts consulted emphasised that, although attracting tourism is very beneficial for local areas, the number of tourists attracted

requires to be borne in mind lest this number become too high. This points to the issue of over-tourism as considered by Goodwin (2017). As noted previously, this concept is defined as giving rise to unacceptable deterioration in life quality in the location or a detrimental impact on the standard of the experience. Over-tourism stands in contrast with responsible tourism, which can result in places being improved for both tourists and residents alike. Over-tourism, on the other hand, is typically obvious to both tourists and locals in terms of its ill effects. Frey and Steiner (2011) refer to increasing numbers of visitors coming to World Heritage Sites and the resultant damage to sites.

In the present research, the visitors to Naghshe-Jahan-Square believed the locals' needs should be prioritised on the grounds that the site already has many tourists and does not need to be enhanced. Weber et al. (2017) argue that over-tourism is caused by the international growth of tourism, the marketing of destinations and changes in tourists' preferences. It can therefore be concluded that, depending on the number of tourists visiting a site before the process of development, it should be decided in relation to the lighting scheme whether there is a need to enhance the attraction of the site such that the number of tourists will be raised, or whether the needs of the locals should be considered first.

In relation to the importance of considering people's roles, the way the place functions for people and the activities that the place facilitates also require to be considered carefully. For example, the majority of the people in Naghshe-Jahan-Square were observed to have an interest in picnicking in the landscape of the square. This is based on the cultural activity in the Iranian context in which people have night-time picnics. Accordingly, it is important for a lighting designer to consider this need of the visitors as part of a successful placemaking project. Similarly, Kurniawati, (2012) states that public spaces must accommodate the different activities to be engaged in within them and be responsive to the interests of the users. PPS (2007) also refers to "Usage and Activities" as one of the four aspects that require to be considered in placemaking, explaining that the opportunities provided for activities give reasons for people to visit a place; if there is no specific activity isolated as occurring within a space, it will be empty. In this way, activities serve as a means of anchoring the main function of a place.

As discussed, the second way in which people's roles must be considered is through engaging them in the placemaking process. This research finds that it is essential to gain an understanding of people's feelings, values and opinions on the site. Firstly, these are the people who will be living in the space, and, secondly, if the people feel they are involved and their opinions are valued, this will result in reductions in vandalism that would otherwise occur. The literature on the sense of place and placemaking also corroborates the findings of this research. According to Hummon's (1992) sense of attachment, as developed by Cross (2001), people's attachment to places intensifies if they are engaged with the community. So, if they can be engaged in the development of their places, they will be enabled to experience higher levels of attachment to those places. Rapson (2013) also believes that a creative placemaking process must employ communities' engagement. Innes and Winton (2017) consider that people should be engaged in the process of design, so in their project 'The Twelve Closes', they engage the residents of a neighbourhood in producing a lighting design scheme. However, the current research does not find that it is strictly necessary to engage people in the design process. In fact, an interesting finding of the present research is that the extent to which they should be involved must be balanced. As the findings of this study demonstrated, people should be engaged such that their engagement is limited to providing their overall opinions and thoughts; it is important that the actual design process carried out in respect of the lighting scheme is not intruded upon. It is the job of the designer to formulate the specifics of the lighting scheme, and not that of the individuals who nevertheless provide input regarding what they might like to see in more general terms.

Another point that has not been raised in the available literature but this research highlights as important is that people should be trained with specific knowledge and skills where this is needed for their engagement in the placemaking process. The findings suggest that people need to be educated with knowledge about the heritage site and the values of the place that will enrich their engagement in the project. The findings also suggest that if people are not provided with this knowledge, their engagement may not be as productive.

8.3 Interpretation and discussion of Theme Two: Historic Sites as a Medium for Placemaking

The second theme found identified thematic analysis focuses on historic sites as a medium of placemaking. These subthemes suggest the existence of two specific points that should be considered as principles within the context of placemaking. One pertains to the management principles that must be considered in historic sites and the placemaking process; the other pertains to how the authenticity of historic sites must be considered, with lighting designs forming part of the placemaking process.

8.3.1 Three essential aspects of management to consider for placemaking in historic places

8.3.1.1 *Engaging different groups of experts*

One aspect of management that must be borne in mind within the context of placemaking results from different professions working as a team on the project. The findings of this study make it clear that there are different aspects - historical, social, and design-based - that all need to be considered. Relph (1976) puts forward that different groups of people should be engaged in the placemaking process. The Global Heritage Fund (2018) also emphasise that a placemaking process for heritage sites should involve the collaboration of a range of different groups, including experts, public officeholders, local organisations, and citizens. Zielinska-Dabkowska (2019) presents a diagram introducing all the different professions that should collaborate to reach a comprehensive project. Besides lighting designers, architects, engineers, urban planners, cost consultants and manufacturers all feature among such experts. PPS (2007) refer to "Look[ing] for Partners" as one of the 11 principles for placemaking. However, their focus is squarely on brainstorming a starting point and the implementation and support of different projects rather than the actual design process. Furthermore, Jane Jacobs stated, in relation to the topic of collaborative work engaged in with a view to bettering a cite, that: "Cities have the capability of providing something for everybody, only because, and only when, they are created by everybody" (Campanella, 2011). Given what was expressed by the participants within the context of this study, a similar conclusion is arrived at here.

8.3.1.2   Designing as part of a masterplan

Another management-related point that should be borne in mind is the need to have a masterplan that considers all aspects of the site in addition to the lighting. It is a matter of note that there are no internationally accepted definitions or approaches adopted for urban lighting masterplans. Zielinska-Dabkowska (2019) explains that this is because the field of urban lighting and lighting master planning is relatively new, only dating back to the late 1980s, when several large-scale projects were developed in Edinburgh in Scotland and Lyon, Caen and Niort in France. Furthermore, those who sought to develop a definition were all professionals working within lighting, and therefore focused on their own approaches to lighting as opposed to a wider range of professions spanning multiple fields (as would be required for the development for a masterplan).

Zielinska-Dabkowska (2019) regards urban lighting masterplans (ULM) as a broad high-level strategic planning documents that include creative and technical information. The aim of such documents is to provide a suitable plan to create an attractive and comprehensive night-time urban space such that each of the individually designed spaces have their own atmosphere and identifiable quality. Such documents should serve as a guideline for artificial lighting developments and the development of coordinated night-time visions of the urban setting in a systematic way. Şerefhonoğlu (2005) also explains that a lighting masterplan must be in place to guide the basic decisions for the lighting design within the city. In order to facilitate such planning, different characteristics of all regions of the city should be analysed in detail. It is the position of this research that, in a historic site, there are many different points of importance, such as the identity of the place, its history, the materials used in the architecture and the social features of the site. There therefore requires to be a masterplan with the lighting design forming one of its components, enabling everything to function together to build a place. Zielinska-Dabkowska (2019) also argues that a masterplan considers the environmental, historical, geographical, cultural, and social aspects of a place, in addition to human requirements, and, while all these matters should be taken into consideration, they should not compete with each other but be considered together in harmony. It is the position of this research that, if no masterplan is in place, the site may suffer as a result of the installation of a

poorly conceptualised lighting scheme. For instance, the design may be conceived only with a view to attracting more people and providing as much access to the historic site as possible. One potential consequence of such an approach is the excessive lighting of the space and its surroundings, potentially causing problems to the neighbourhood and the local residents around the site, whose needs would not have been considered in such a project.

Mutlu and Kurtay (2018) argue that a masterplan for lighting should study the city such that the following process takes place: initially, the whole city should be analysed, following which a regional analysis is conducted and the elements within the site are analysed one by one. Finally, a determination of the elements to be used in the lighting should be formulated.

Although this research and some of the existing literature point to the importance of a masterplan being in place, Zielinska-Dabkowska (2019) points out that there are still no established guidelines directing how to design the creative part of an urban lighting masterplan. The consequence of this is that each lighting designer, as with other practices, follows his or her own methodology and approach, in many cases without considering the other features of the space in question.

8.3.1.3   *Developing localised lighting strategies*

Another finding of this research is that there should be localised lighting strategies and regulations for each city. In fact, the experts interviewed in this study voiced that each city has its own values and considerations that must be respected. Localised lighting strategies can ensure that the main considerations of a city are met in relation to a lighting design. Furthermore, if there are no sets of lighting strategies for each city, each lighting installation and project may be designed in accordance with the designer's own specific preferences and practices, which may result in visual incoherence, damage to the authenticity of the space and the inability to cultivate a sense of place. Of course, it is also the case that, although having certain regulations is beneficial, they should not be overly restrictive to the point that lighting designers' creativity is stifled.

The extant literature also reveals that most cities do not have such lighting strategies overall, and some that do have general regulations do not have anything specific for

historic sites. For instance, Warwick University developed a suggested lighting strategy for Coventry in the UK in 2018, with the overall philosophy of achieving a good level of maintained illuminance across sites, minimising dark areas to cultivate a safe environment and avoiding light pollution and light spill affecting surrounding areas. In the guidelines, only broad regulations are offered on column lighting, lightings on trees and benches and in-ground linier and directions of lighting. Edinburgh Council, meanwhile, developed *A Sustainable Lighting Strategy for Edinburgh* (2012). Having regard to the fact that Edinburgh is a historic city with many World Heritage sites, this document is concerned only with very general matters relating to lighting, such as the use of warm lights in the Old Town versus cold light in the New Town, the lighting of architectural features (such as domes and spires of important buildings), the effects of lighting of windows in the Old Town elevation, and limiting other lighting effects to key monuments and cultural buildings. Edinburgh World Heritage also published A *History of Lighting in the Old and New Towns of Edinburgh* (2010), which is concerned with how the gas and electric lighting throughout the historic spaces of the city has been restored. However, this document only focuses on the form of the lighting elements and the colour of the cast iron, rather than the light coming from the fittings. While these steps are taken to develop lighting strategies in Edinburgh, one of the world Heritage Experts offers the example of a poor lighting plan in Edinburgh in Princes Street, which he regards as stemming from inadequate lighting regulations in the city.

8.3.2 Considering authenticity in the lighting of historic sites in placemaking

This research also makes it clear that authenticity should be respected when lighting historic sites as part of a placemaking process, with all of the experts across both Heritage Experts and Lighting Designers having something to contribute in relation to authenticity.

According to the World Heritage Committee (2008), authenticity and integrity are the two critical criteria that a historic site must fulfil to be listed as World Heritage Site. Through integrity, it is ensured that all the crucial elements of the site are undamaged and intact (WHC, 2008). What becomes important in lighting the historic site in this regard is that the lighting features be installed such that no damage or harm is caused

to the historic sites in any way. It was a matter of agreement among all the experts consulted within this research that the lighting features chosen for historic sites must not damage these sites and should be installed such that harm to the buildings is minimised. Several of the experts emphasised that this goal is easily met with the new lighting features, as they are small and well designed in terms of how they are to be installed. Integrity, as one of the criteria of world heritage sites, can therefore be respected in the process of constructing lighting schemes.

Authenticity, on the other hand, raised a certain level of debate amongst the experts consulted. While Knudsen and Waade (2010) find that a site does not require to be considered antique or authentic to attract attention, the interviewees consulted here took the view that authenticity should be considered in the lighting of historic places.

According to the definition of "authenticity" rooted in the etymological definition from Jokilehto (1999), there is reference to the notion of something being "original as opposed to counterfeit" (Jokilehto 1999, p.296). Labadi (2010) explains that authenticity is referred to as "having been frozen in time" as a result of the World Heritage Operational Guidelines, which count the four tangible parameters of authenticity (Jokilehto, 2006). Given this definition, only one of the Edinburgh-based Heritage Experts took the view that lighting historic sites should reproduce past lighting to the greatest possible extent in pursuit of authenticity. The others mentioned that being truly authentic means using the same source of light, such as fire torches and candles, which is obviously inappropriate. Therefore, given the use of electrical lighting features, authenticity does not result. They also stated that using the electrical lighting but with the aim of recreating the look of the historic site looked was also not good practice. Most of the Lighting Designers explained that, in the past, such sites had very little light, and many were completely dark at night-time. According to the literature, as has by this point been well discussed, the placemaking process is engaged with a view to improving the community socially, economically, and culturally, and so, in such cases, it may be more appropriate to view the goal as being to breathe fresh life into the site in question. The use of minimal lighting will not result in the attraction of people or promote social gatherings, and so placemaking would not have been engaged in. It is therefore the conclusion of this study that reproducing the looks

of historic sites slavishly out of blind pursuit of the authentic look is not recommended.
Rather, lighting should be used to move the site into the present and onward. At the
same time, however, all the experts stated that authenticity is an important aspect of
these sites and lighting must reflect this in terms of the placemaking process engaged.
The way in which lighting should be used to move the site into the future and facilitate
placemaking so as to respect authenticity is therefore one of the most important
findings of this research.

Within the literature, in seeking to define "authenticity," Stove (2004, 2007) uses
strings such as "carrying […] values" and "the ability to convey significance." Dushkina
(1995) also explains that, apart from the tangible factors of a historic site that
contribute to its authenticity, there are also certain intangible factors that inform the
authenticity of the site, such as traditions, spirits and feelings, as similarly noted in the
latest version of the World Heritage Committee Operational Guidelines (2008). She
explains that, while the tangible factors tend to remain intact, the intangible aspects
may change through time. Dushkina adds that "authenticity is a value category of
culture" (Dushkina, 1995, p.310). While the current study suggests that lighting should
not be used to reproduce the past look of the historic site in relation to tangible
authenticity, it is recommended that intangible factors be considered in the use of
lighting through placemaking. The interviewees in this study voiced that lighting should
give rise to better places while honouring the UNESCO designation. They therefore
argue that, today, lighting should be used to actually develop an authentic feel in
historic sites and help transform these spaces into places. So, while they emphasise
that lighting will influence the place, it will not harm the intangible authenticity if it is
used insightfully. It can therefore be used in various creative ways and enhance
feelings and activities amongst people. In this sense, being authentic means being
responsible in using the light in historic sites, rather than copying the past. Being
responsible involves not using the lighting to make the historic site look completely
different to its pre-modification state. The lighting ideas must not be crafted in a
manner that is totally unrelated to the traditions of the site; rather, they should be
built upon the narratives of the site, telling stories of the past and the history of the
site rather than blindly adhering to what was once historically the case. Through these

techniques, lighting can have visual impact on the historic site as part of the placemaking process.

The Lighting Designers interviewed voiced that lighting influences sites' intangible authenticity in terms of the interpretation that such schemes convey. Of course, interpretations that are conveyed through lighting can assist with transforming the space into a place. However, light must be used in a way such that does not change the story or history of the site. This study recommends that, in order to minimise the negative effects of interpretations on intangible authenticity, lighting designs should consider people's values, the meanings the site has to people, the feelings they have towards the site and the identity of the historic site. The literature in relation to the sense of place (e.g. Shamai (2005)) also emphasises that, in the higher levels of sense of place, people experience a sense of attachment as they build emotional relationships with the place and the place comes to convey meaning and specific identities to the people. Hummon (1992) also believes that one's feelings towards a place and the meanings it has for individuals relate to experiencing a sense of place. If these goals are met in the lighting design of historic sites, the intangible authenticity of the heritage site is met, and the site can successfully transform into a place through the placemaking process.

Finally, one especially interesting finding of this research suggests that, although authenticity is something that is desirable to cultivate in respect of a historic site, there are occasions where, within the context of a placemaking process, there is a need to eschew the pursuit of such authenticity. There may be cases such that the historic site has had a negative role in the past. Given the aims of the placemaking process, there is a need to turn the space into a place that people would be attracted to and choose as a location for social engagement. It is clear, therefore, that slavish adherence to authenticity in such cases might stand to impede progress towards these placemaking goals. One of the Heritage Experts gave the example of Edinburgh Castle, which has been a site of considerable bloodshed. Today, however, Edinburgh World Heritage crafts and works its reputation such that it is viewed as a positive place and a symbol of Edinburgh. So, in such cases, lighting should be used to help move away from the authentic narrative of the site, and instead craft positive values and feelings to result in

a sense of place. The literature in relation to sense of place reveals that the way people feel about places will result in how they value it, which, in turn, will result in whether they feel a sense of place in the setting (Najafi and Shariff, 2011). If the setting conveys negative feelings amongst people, the evaluation will be negative and thus the space will not become a favoured place among the people targeted in the placemaking process.

8.4 Interpretation on and discussion of Theme Three: The Principles of Lighting for Historic Places

One of the themes identified through thematic analysis in this research relates to the aspects of lighting in historic spaces through placemaking. This theme comprises three subthemes. Initially, the effects that lighting can have on historic places in relation to placemaking is found and analysed. The second theme outlining the findings is then formulated, describing the different aspects that a lighting design must consider in relation to historic sites. These constitute elements of the features that should be considered and promoted in relation to the lighting design process, including amplifying a narrative through light, building an interpretation through light, enhancing the atmosphere through the use of light, creating layers with light, making the site attractive and exciting, considering meanings and values within the site, providing safety, considering gendered issues, considering activities occurring within the site, and considering the functional nature of the surroundings of the site. The final subtheme considers some of the main lighting characteristics that are found through this research and require to be considered in the undertaking of projects. As another part of the lighting design principles, some point to the characteristics that must be promoted, while others point to characteristics that should be avoided. These include using the malleability of light, avoiding uniform lighting, avoiding floodlighting, the use of harmonic lighting, glare in lighting, over-lighting and overly-theatrical lighting.

8.4.1 The effects of lighting on historic places through placemaking

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.

8.4.1.1 *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. Bonn et al. (2007) explain that the physical conditions of a historic site play an important role in attracting visitors, and encourage 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 Van and Bart'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 honoured as gems of civilisation, thereby reminding people of their significance. As a result, these sites become more recognised, loved and cared for by people and the authorities. In addition, they are less prone to damage and graffiti, with even anti-social behaviours being reduced in and around these sites.

8.4.1.2 *Lighting has economic outcomes*

Economic benefits constitute a well-known benefit associated with the installation of effective lighting schemes within historic sites. In addition to the discussion offered by the Heritage Experts and Lighting Designers in relation to this topic, it was also clearly observed in the Saint-Avit-Sénieur case study. 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 Airbnb rooms, as well as in local restaurants and shops. Economic benefits are counted as one of the main outcomes of placemaking and urban regeneration results within the literature, as discussed in Section 7.1.1 (Litchfield, 2000; Roberts and Sykes, 2000; Vazquez, 2012; Morrison, 2018). Given the interview data and the consideration of the best practice site, which clearly demonstrated how lighting has affected the economics of the village, it is clear that lighting can in fact be used as an influential tool for placemaking. Rankel (2014) and the Institute of Historic Building Conversation statement (2005) 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 this research, the same conclusion is reached in relation to Naghshe-Jahan-Square. Although the historic site is one of the city's major attractions for tourists and locals, this attraction is only based on its historic nature and the greenery. 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, with some even mentioning that they felt unsafe in some of the spaces due to a lack of adequate lighting. 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.

8.4.1.3   *Lighting has educational outcomes*

Another finding of this research is that lighting can have educational benefits in historic sites. According to the interview-obtained data, lighting can be used to educate people about the history of a site and connect them to the heritage through visualising narratives. Furthermore, by encouraging social gatherings at night-time, a place can be provided for people to be educated about different cultures. Tilden (2009) works on interpretations of heritages, arguing that it is a form of education that can teach about the meanings. Although his research is not concerned with lighting in any central sense, the present research demonstrates how lighting conveys interpretations within sites more generally. Thus, when lighting is used in historic sites, as Tilden discusses, it can educate people about certain meanings and build associations with their authentic artefacts. The educational influence of light in historic sites is especially visible in Saint-Avit-Sénieur. The designer aimed to illustrate the history and poetry of the village through calligraphy and images through the light projected onto the walls of the church, and many people pointed to how they have learnt about the history of the site and their village through the lighting scheme. At the same time, the interviews with the Lighting Designers made clear that such activity could also lead to cultural exchange. In this regard, ARUP (2018) also counts educational benefits as being one of the four main impacts that lighting can have on historic sites. They point to ways in which lighting can educate individuals in heritage sites through displaying the technical development of lighting, as well as showing how

light has been used in the past and historically. However, this study finds that lighting can be used to tell a narrative and educate individuals about history rather than only presenting how lighting was used in the past. The present findings also suggest that lighting can educate people about different cultures by encouraging social interactions within these sites at night-time.

8.4.1.4 *Lighting provides aesthetic enrichment, 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 enrichment of the place. The findings of the present research indicate that, while the majority of the people interviewed in Saint-Avit-Sénieur believed beautification to be at least one of the reasons for the installation of lighting, the people in Isfahan did not hold such a view, mostly regarding lighting as a tool to provide access and safety. Having regard to the comparison to be drawn between the best practice site and Naghshe-Jahan-Square, it can be concluded that such responses are due to the fact that, in the latter site, people have only experienced lighting in purely functional ways, and even these needs are not met, given the responses of the visitors. In Saint-Avit-Sénieur, on the other hand, the visitors have experienced how lighting has beautified their historic site and have thereby directly experienced its benefits. The Heritage Experts also pointed out that, when a city prides itself for its beauty, lighting should serve to contribute to this. Given the findings, it is suggested that, in some cases, lighting should merely focus on beautification rather than figuring within any educational approach.

Rogan et al. (2005) believe that one of the features of a site that make it psychologically comfortable in relation to the sense of place relates to the visual enrichment of settings. Steel (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 (2010) believes that lighting has the potential to enhance aesthetic values and improve the vision of urban spaces, resulting in improved quality of life. The findings of this project,

given the data obtained through the interviews and the case studies, also suggest that lighting has the potential to provide visual enrichment. Lighting could therefore be used in a placemaking process such that psychological comfort and improved quality of life result. In fact, apart from visual enrichment, lighting designers and Heritage Experts in this study directly pointed to the fact that lighting can influence people's health, mood and mind, and enrich their lives. Flynn (1973) was amongst the first lighting design researchers who studied the influence of lighting design on people's emotions and found that lighting design is one of the important design features that can impact quality of life. Custers et al. (2010) also find that lighting design can influence emotions, mood and cognition. As Steele (1981) argues, in environmental psychology, the sense of place refers to how a person experiences and feels in a given place, whether the emotion experienced is joy, stimulation, excitement and so on. In this regard, whatever element within the setting that can enhance such feelings can help to foster a sense of place.

Its traditional security role has been progressively matched by new ones and nowadays the use of urban illumination for city beautification seems to be a major concern for new lighting strategies (Van Santen, 2006; Schulte-Römer, 2011). As noted by Meier et al (2015,p.2), currently "the possibilities artificial illumination offers to open up new perspectives on the night-time city that are markedly different from daytime perceptions are purposefully put to use in the context of urban renewal, place making and city marketing."

8.4.1.5   *Lighting builds emotional attachment*

Emotional attachment was amongst the most important features associated with lighting design in historic places within the context of this research. The Lighting Designers emphasised that people love historic sites, and so they also expect to be able to see and reach them after dark. If these sites have appropriate lighting schemes installed, they will feel even more emotionally attached to them. This was clearly observed in the context of the case studies. While in the best practice site, people clearly expressed that they felt even more emotionally attached to the historic site after the installation of the lighting scheme, 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. Indeed, some even expressed that they did not feel comfortable during night-time visits because of the inappropriate lighting. 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. Shamai'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. Bonn et al. (2007) find that, while historic sites are appealing to diverse types of people, the components that provide greater uniqueness in places trigger people's emotions more than others. All these studies emphasise the importance of emotional attachment to places. The present research suggests that lighting has the potential to enhance emotional attachment to places, and while historic sites are already one of the main environments that people can build emotional attachment with, lighting must facilitate this sense through the placemaking process.

8.4.1.6   Lighting creates new experiences

This study also suggests that lighting can result in the creation of new experiences of the place in historic sites to a greater extent than those of the daytime. In fact, while the historic site is visible under daylight such that all its features are visible, at night, through an appropriate lighting design, certain features can be highlighted, and other parts can be left dark to give a different experience to visitors. Lighting can also create a new atmosphere or be used to tell a new story. This is an important point, as, as Gussow (1975) states, the importance of people's experience within a setting can assist with turning every space into a place for people. Relph (1976) also emphasises that, when spaces are turned into places, they can play an important role in ordering people's experiences. Obermiller and Bitner (1984) also explain that the overall experience of people within a place can have a direct influence on whether they evaluate it positively and whether there is a consequent change in the attitudes towards the heritage. This is a relevant consideration in terms of predicting whether visitors to the site will return. Manzo (2003) also claims that, in phenomenology,

people's experiences in places are developed through the expressive quality of the way they sense the place in question. Historic England (2019) gives related suggestions as to how a lighting scheme should be, emphasising the need to develop a more inclusive night-time experience that promotes the observation and experience of heritage buildings.

8.4.2   Lighting design considerations for historic sites in the placemaking process

Having regard to the data obtained in the context of the interviews and the observation exercises, this research considers some of the main factors that need to be borne in mind when developing a lighting design specifically for historic sites within the placemaking process.

8.4.2.1   *Amplifying a narrative through light*

The findings suggest that lighting can be used to convey a narrative within the historic site. Through the interviews, the experts and lighting designers suggested that the history of the site should be studied carefully by the designer. They also expressed that the lighting has the potential to convey a narrative of the history of the site. Based on the historic site and the narratives that the place has that relate to its history, different stories can be crafted and presented through lighting. Beevar and Blossom (2009) take the view that lighting has certain similarities with language in terms of compositionality. In language, the different parts of speech come together to give rise to a complex meaning, and light also contributes to a composition of design elements and principles within the built environments. Dugar (2018) also puts forward the view that poetry is also a compositional system, which if used with the lighting, can influence what is been perceived. As such, poetry can offer a certain quality to those that perceive it. In this regard, lighting that is based on poetry can affect what is perceived within the site and add meaning to it. Dugar therefore suggests using these two elements of poetry and lighting together. Although Dugar's research is focused squarely on poetry, it is also suggested that his findings are of relevance to the present research. In fact, this study suggests that any story that can influence what is been perceived through the addition of a thought or meaning that comes from the site could be used in a lighting scheme to enrich the experience of the visitors.

As Papakammenou (2015) describes, the lighting of a site is achieved through the composition of multiple layers of light, resulting in a complex lighting scheme that concurrently develops a three-dimensional narrative, descriptive and suggestive theme. Spaces that define humans' historic preferences create a narrative theme; daily requirements create a descriptive theme; and future aspirations create a suggestive theme. He suggests that narrative lighting can remind people of their native places by using features with an identifiable morphology. Hansen and Triantafyllidis (2015) also introduced lighting as a tool for storytelling at the 8th International Interactive Digital Storytelling Conference, arguing that storytelling and light can share a bidirectional link: light can be used as a multidimensional design element, where light is communicating and telling a story; but it is also the case that, in the other direction, stories can affect the multidimensional design of light. Therefore, as this research suggests that lighting can present a story within historic sites, given the findings of Hansen and Triantafyllidis (2015), the stories chosen influence the design of the lighting, and such concepts should be considered and studied in terms of the options of narratives pertaining to the specific historic site. For instance, The Royal Cast Collection as part of the Statens Museum for Kunst in Copenhagen includes over 2000 sculptures of European human forms with narratives relating to Christian traditions and Pagan gods. Choosing between the different stories for the lighting of such sites is a fundamental part of the lighting design process. Using narrative in the lighting has given rise to great successes in the best practice case study. In fact, the lighting designer studied the history of the site and village and presented certain narratives pertaining to its history and poetry through the use of light within different parts of the church. The people were clear that this way of lighting the historic church has served as a link with their history and heritage, and they find the use of lighting to tell these narratives to be a point of significant interest. At the same, according to the data obtained from the observations conducted, the lighting in Naghshe-Jahan-Square simply does not emphasise any of the stories associated with the site, notwithstanding that there definitely are historical narratives that could doubtlessly be drawn on to inform the crafting of a suitable lighting scheme.

8.4.2.2 Building interpretation through light

According to the findings, lighting builds interpretation within historic sites, so what is interpreted and how it is interpreted must be considered in the design process. As soon as a historic site is illuminated, the way it is illuminated serves to offer an interpretation of the site. Accordingly, when specific features are lit and others are left dark, the lighting conveys that some parts are more important than others. Alternatively, when a space is well lit, it is conveyed that it is a safe destination. So, unlike in the daytime, when the whole historic site is bathed in the light of the sun, at night-time, it is the lighting installation that can impose an interpretation.

Boyce (2003) explains that every lighting scheme conveys a message that comes from its designers, the client and the site, and people interpret this message based on their culture, expectations and the context. Dugar (2018) suggests that people perceive environments differently based on their cultural backgrounds, and thus the way they interpret the same lighting design in an architectural site may differ. Part of these interpretations are a result of people's cultural backgrounds, and so, for each historic site's lighting scheme, the people that frequent that site and the cultural aspects of the setting must be studied. For instance, in Naghshe-Jahan-Square, it was found that dark spaces within the landscape are interpreted as being unsafe, particularly for women. This shows that the culture and people's expectations have not been considered and the lighting design conveys undesirable messages. Dugar (2018) also believes that the architectural features of the site influence the interpretation passed from the design. He explains that, in the case of lighting designers who mainly focus on using descriptive lighting standards and base their design on new lighting regulations, quantitative assessments of light and the technical aspects of lighting, there is a temptation to neglect the architectural meanings and cultural aspects of each site, with standard practice often being to apply the same principles across the gamut of sites. The specific architectural features of each historic site must therefore be studied carefully so that the lighting design can convey the right message for that site. Accordingly, this study suggests that there is a need to take into account the interpretations that the lighting design conveys to people within these sites. This should be done through studying visitors' and locals' cultural backgrounds and expectations, as well as the architectural features of the target historic site.

8.4.2.3   *Enhancing the atmosphere with light*

The findings of this research suggest that lighting should be constructed such that there is consideration of the creation of atmosphere in historic sites through the placemaking process. Cochrane (2004) states that illumination is capable of building such atmospheres. Laganier and Van der Pol (2011) argue that, apart from the practical installation of lighting, lighting designers have extensive knowledge of the need to create atmospheres that can transform the setting through light. Böhme (2016) believes that atmospheres can influence people, harmonising their mood and simultaneously extending that mood. According to Stevens (2007), being absorbed into joyful atmospheres facilitates an experience that is more socially integrated, cooperative, and emotionally participative. Cash (2004) and Bonn et al. (2007) believe that heritage attractions have been utilising illumination to develop distinctive atmospheres to encourage more visitors. However, this was not the case in Naghshe-Jahan-Square. In fact, the lighting not only failed to cultivate any atmosphere, but the dull and inappropriate lighting poles and the old-fashioned floodlighting destroys the original atmosphere of the historic buildings. Strikingly, Bonn et al. (2007) find that the atmosphere created through light can have greater significance for the visitors compared to the design and social aspects of a setting. Górczewska (2011) also believes that lighting has the potential to create atmosphere, explaining that this can be done especially through lighting dynamics and colour. This research therefore suggests that lighting design in historic sites can enhance the atmosphere there.

8.4.2.4   *Creating layers with light*

This study also suggests that lighting should create layers within a historic site rather than just enhancing the architecture of the site. To explain this in relation to practice, when floodlights are used in an architecture site, all of the architecture is displayed. This is seen in the lighting of Naghshe-Jahan-Square, where flood lighting is used to illuminate the whole site and all of the buildings. This is the most basic level of using light. Sometimes, historic sites are very strongly illuminated with the aim of drawing as much attention as possible from the neighbouring buildings, the general aim being to display and centre the site. This often results in competing levels of light across different historic sites within a single city. Górczewska (2011) describes the aim of night illumination as being to portray the whole architecture as if it were illuminated

by the sun (as is the case in the daytime). At the next level, lighting is used with the aim of enhancing the architecture and making the whole building look greater. In this setup, the whole architecture is illuminated in a way that is enhanced. It is the subsequent level that the present research isolates as being preferable: lighting does not always need to be used to present or enhance the whole architectural site. It can be used to enhance chosen parts or spaces of the building. Through this method, different layers are created, and various parts of the architecture can attract more attention while other features are darker. Shadows also play a role in the design. This should be considered across the whole historic site, such that even some of the buildings or sections of a site can be left darker. So, while Górczewska (2011) believes that lighting should portray the building as if it were during the day, the findings of this research are starkly different, suggesting that it is instead beneficial to build layers to give rise to a fresh portrayal of the site in question. In this regard, Seitinger and Weiss (2015) refer to their interview with lighting expert Wout Van Bommel. Van Bommel explains that lighting in urban spaces needs to have contrast to "make a space more interesting." Through this method of lighting, people have the chance to explore and discover by means of their own experience. Loe (1996) also believes lighting should include a composition of light and shade put together to complement architecture in a holistic way, simultaneously illuminating the architecture and giving rise to certain points of interest. Hong (2007) explains that lighting should create a "visual hierarchy," which can be realised through creating contrasts amongst the brighter and shadowed areas with light, the creation of "layers" with light, as well as the link between the lit and the adjacent areas. In this regard, giving rise to visual contrast through experimenting with light and shadows and the creation of layers is recommended, and regarded as ultimately preferable to illuminating an entire site as brightly as possible.

8.4.2.5   *Making the site attractive and exciting*

Another of the points 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. While Bonn et al (2007) do not directly point to lighting, they emphasise 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. The

people interviewed across the two case studies emphasised the importance of this matter in particular. The majority of the people in Naghshe-Jahan-Square 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. The majority of the people interviewed in Saint-Avit-Sénieur, on the other hand, mentioned that, although the site is already a favourite place for them, it is the uniqueness of the lighting that makes the site especially attractive and worth visiting at night. Historic England (2019) emphasise that it is essential to consider making a site enjoyable and vibrant through a lighting scheme. This research therefore suggests that, when lighting historic sites at night, lighting should give rise to something unique at night with a view to making the site attractive and exciting.

8.4.2.6 *Considering meanings and values within the site*

This research suggests that the lighting design must consider the meanings that are specific to the target site. Accordingly, lighting designers must study the meanings and values that the historic site carries for people, and the design must be based on these. Many researchers in the field of architecture familiar with the concept of the sense of place have emphasised the importance of considering the meanings and values of the specific site in the design process. Examples include Rapaport (1990), Sime (1986), Relph (1976) and Najafi and Shariff (2011), as discussed in section 7.1.1. However, no research explains how lighting should consider these meanings in the design process. This research suggests that, for instance, if the site has rich cultural meanings for people, those cultures should be studied, and the lighting should be based on these. Alternatively, if the historic site has deep religious meaning, the lighting designer should take this into account and study the religious aspects and implement them in the design. To learn about these meanings, as well as studying the people and their values, the site should also be studied. By studying the specific elements within the site, one may come across specific features that mean something in that setting, such as a special stone in the architecture, or a certain shape or colour. Based on the findings, the lighting design must also follow the intentions underpinning the architectural features of the site, and the vocabulary of lighting should accordingly be site-specific.

8.4.2.7   *Providing safety*

Safety is another aspect that lighting in historic sites should reflect. 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 Setha (2012) regard the safety of a space as being one of the parameters helping to cultivate a sense of place.

The findings of this thesis 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 behaviours and ensure that visitors feel that they are safe.

8.4.2.8   *Considering gendered issues*

One of the most interesting findings within this study, particularly in relation to the interviews with people in Naghshe-Jahan-Square, 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 for men. In fact, all groups of interviewees agreed that the users' safety is an important feature that lighting must provide. However, all the female users in Naghshe-Jahan-Square made the claim that the lighting of Naghshe-Jahan-Square does not consider female visitors to an adequate extent. Even many of the male interviewees agreed that the site may feel safe for them but unsafe for female users. In fact, they all emphasised that there are too many spaces that are left dark, yielding a sense of a lack of safety for female. All the people interviewed in Saint-Avit-Sénieur voiced a belief that the site has considered the needs of all ages and both genders. Furthermore, no concerns regarding gendered issues were raised before these issues were brought up directly. While several accounts, such as Narboni (2004), Cochrane (2004) Altman, PPS (2007), Altman and Setha (2012) and

Blow (2018) all 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 being 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. This research therefore suggests that, in designing lighting through the placemaking process, the needs of both men and women must be considered.

8.4.2.9   *Considering activities occurring within the site*

A lighting design for historic sites through placemaking must reflect the activities that take place in the site. Davoudian (2019) raises the claim that lighting must be designed for people and to support their daily activities in *Urban Lighting for People*. Although this was referred to through the interviews with the Lighting Designers, it was also clearly observed in the Naghshe-Jahan case study. As an example, through the observations and interviews with the people in Naghshe-Jahan-Square, 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 socialise and eat together. Although night-time picnicking is a favourite 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 Project 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.

8.4.2.10 Considering the functionality of the surroundings of the site

One of the main findings of this research is that, in addition to the target site, the spaces around the site must also be studied and improved where necessary. This seemed an important matter for the Lighting Designers consulted, who believed that it is undesirable to just light a site and ignore the surroundings, whether in relation to the aim of attracting people at night-time or the effects the lighting of the site has on the surroundings. In this regard, Projects for Public Spaces (2007) also emphasise that one of the key attributes for successful places is that they are accessible and well connected to the surroundings of the site and any other important places around the site. They therefore believe that the success of the project can be easily judged in terms of the connections it has to the surroundings, especially in relation to visibility. The current research also suggests that this aspect is important, especially in relation to the Naghshe Jahan case study. The square is situated in a busy part of the city such that there are many streets linked to it. However, only two main streets from either side were found to be bright enough with street lightings and shop entrances for people to enter the square. The other streets that were observed to have a more historic character were mainly darker and the people interviewed mentioned that they would not use them because of precisely this state of affairs. At the same time, however, Górczewska (2011) points to the fact that the architecture must be well lit in comparison with the surroundings. He explains that lighting can be a factor informing meanings and illustrating the importance of the target architecture. When parts of the architecture are left dark, they convey negative impressions and meanings to the viewers. This is especially true when the architectural features are darker than the lightings of the surrounding streets. This was also observed in Naghshe-Jahan-Square. In this case study, the shops were very brightly lit, while the architectural features were very dark, giving the impression that the shops are of value in comparison with the neglected historical site. Historic England offer advice on how to develop a lighting scheme for historic buildings, and emphasise that, before developing the lighting design, the location of the site and the neighbouring and spaces that may be affected by the lighting must be closely studied. Given these findings, this research suggests that all the surrounding and different parts of the site need to be studied and designed in relation to each other.

8.4.3 Considering essential characteristics of light for historical sites in the placemaking process

Within the findings of this research, many characteristics were identified that could be altered in relation to the lighting of a historic site. These included colour rendering, intensity, colour temperature, the direction and location of the light and many more such factors. However, no regulations were suggested, as it was recommended that all these characteristics be considered as being completely dependent on the historic site's location, architecture and cultural features. Accordingly, this research suggests that every historic site needs a certain set of lighting designs. Furthermore, there should not be any fixed regulations of lighting characteristics regarded as somehow universal. However, there are several aspects noted in these characteristics of lighting such that these are regarded as applying across all historic sites. Some highlight what characteristics of light should be considered in historic sites, while others point to what characteristics must be avoided in historic sites in the placemaking process.

8.4.3.1 Malleability of light

The character of malleability emerged as a matter that should be considered within the process of placemaking and constructing lighting schemes. In fact, in the course of the interviews, it was found that modern lighting features give rise to the possibility of changing what they project in sometimes quite radical ways, and it was suggested that, over a period of time, or for special occasions, this feature could be used to change the lighting of the historic site. This possibility seemed to be very much appreciated by the people across both case study sites as well. Hong (2007) also points to the fact that current lighting technologies lend the designer the ability to have flexible control over the design, resulting in better integration of light with the building and more dynamic lighting environments. It is the finding of this project that such features should be taken advantage of.

8.4.3.2 Avoiding uniform lighting

Lighting historic sites should not result in a uniformity of design within a single site. This finding emerged as a result of consultation with the Lighting Designers as well as people interviewed on-site. Kobayashi et al. (2001) consider people's preferences regarding lighting and find that non-uniform lighting tends to be preferred amongst people. Corroborating these findings, many people in Naghshe-Jahan-Square

mentioned that they believed uniform lighting was not appropriate and does not add anything positive to the historic site. In this regard, historic sites are found to have so many features that uniform lighting will cheapen the presentation of these. Moreover, given what the Lighting Designers said regarding the fact that the lighting of historic sites must add layers to the site, a uniform lighting would not suffice. Zakaria et al. (2018), however, do suggest the use of uniformity projected lighting for building facades, arguing that such an approach will recreate the appearance of the building in daylight, enhancing the details of the architecture to a greater extent than other methods. This runs contrary to the findings of the present research, which finds that lighting should be constructed so as to make possible an experience very different to that of the daytime, adding layers to the site rather than simply illuminating the whole building with bright light to enhance the architecture of the site as a whole. In this regard, the present research is closer to Clanton (2014), who reports on an experiment involving "spraying" uniform lighting on urban environments. She finds that uniformity is not an ideal option; contrast and non-uniform lighting is preferable in terms of the ability to enhance visibility and experience.

8.4.3.3   *Avoiding floodlighting*

Floodlighting is a type of lighting highlighted as being particularly inappropriate for historical sites in the context of this research. As the Lighting Designers explained - and as the observations in Naghshe-Jahan-Square suggested - floodlighting results in historic buildings being portrayed in such a way that their character, identity and materiality are lost. According to Philips Company, ambient light or general light is used as the starting point for a space to establish the 'base' level of light in a space. This lighting is useful for providing visibility through basic illumination, while, in the case of old lighting technologies, such as metal halide light and sodium, low-pressure lights are used, which results in greater consumption of energy in comparison with new technologies, such as LEDs. Although they are required to illuminate the entire space for safety and visibility, these lights are not sufficient for historic sites, as they do not facilitate any remarkable emotional and aesthetic character. In fact, as Joels (2006) also argues, lighting in historic sites should be constructed so as to illustrate the unique and valuable characteristics of the identity of the site. Peters (1992) stresses that floodlighting is not suitable for historic sites as it merely brightens all the space. In

historic sites, it is important to emphasise certain points and highlight specific features to focus attention and interest and create an atmosphere. Zakaria et al. (2018), however, suggest the use of natural white floodlights for buildings, stating that it will enhance the architecture and brighten the whole site, allowing as much of the site to be presented as possible. They also refer to UNESCO's suggestion to use floodlighting. However, as the Lighting Designers in this research stated, floodlighting is largely old-fashioned, and the literature also explains that such lighting was introduced by UNESCO to historic sites in the 1970s, when the aims of illuminating such sites were very different (Van Santen, 2006; Ünver, 2009; Pingel, 2010). Di Salvo (2014) explains that it was not until the 1980s that experts started working with lighting to visualising the appropriate value of the historic place, promoting and evocating the experiences of visitors in these spaces and generating specific emotions. Historic England (2019) also point to the fact that many of the floodlighting schemes have been or are in the process of been phased out because of their poor efficacy and non-compliance with European Directives, the tendency being to replace such systems with LED lamps. The findings of this research therefore conflict with the findings of Zakaria et al. (2018) in relation to the appropriate use of floodlighting and uniformity in historic sites.

8.4.3.4   *Harmonic lighting*

Harmony in relation to lighting the historic site is another matter that the findings suggest should be taken into account. In fact, harmony seems to be an important element as a general aspect of environmental design. Garaus (2017) argues that harmony in the space has a positive influence on visitors' behaviours, especially in the long term. In his research, he finds that harmony increases meaning and increases the understanding of the environment, resulting in an increased sense of pleasure. The LAMP Award (2019) suggests that lighting strategies should focus on building spaces that combine brightness, wellbeing and harmony. In terms of how lighting should be in harmony with the historic site, Kopanari et al. (2019) advance that it is the colour of the light that should be in harmony with the material used in the architectural settings. Górczewska (2011) also believes that the light colour should be the same as the facing material used to cover architectonical elements to give rise to harmony. Although what they suggest could result in harmony between the environment and the site, this may limit the use of light colours in the historic site and prevent taking full advantage

of the range of opportunities that light can offer to build new experiences during the night. This research does not focus on the colour of light for harmony, but it emphasises that the lighting should be in harmony with the meanings and values of the site, and the narratives presented in connection with the site. Furthermore, architectural features should also be studied to prevent lighting designs that are in contrast with the rest of the elements in the site.

8.4.3.5   Preventing glare in lighting

One potential result of lighting that this study emphasises the need to avoid is that of glare. As Cline, Hofstetter and Griffin (1989, p.292) 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 extreme 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 distraction of light sources within sight. As Philips Company note, 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 the different types of glare discussed in the literature, it is clear that, in this case study, 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. This discovery could only be made

through the observation and interviews conducted in Naghshe-Jahan, which seemed to be because the visitors there were seriously affected by this particular problem, resorting to covering many of the light sources with bags or clothing to reduce glare.

8.4.3.6   Avoiding over-lighting

Over-lighting is another means of presenting light that must be avoided in the context of historic sites. This lighting method is now regarded as being out of date. At the beginning of the 1970s, what mattered was making historic sites the focal point of attention within cities. According to Entwistle (2014), with the improvement in lighting technologies, cities increasingly started using lighting for sites, which resulted in over-lighting in specific sites, with extreme contrasts among buildings. In her research, which was conducted in collaboration with lighting designers Speirs + Major, it was concluded that over-lighting in streets can result in people perceiving neighbouring residential areas as unsafe as a result of the reduced illumination there. In other words, people's subjective perception of safety massively depends on the nature of the transition from one lighting zone to another. Similar findings emerged for Naghshe-Jahan-Square in the context of this study: the fact that the shop entrances were overly bright made the landscape feel even darker and unsafe for many visitors. So, although, in this case study, over-lighting could not really be observed in the context of the historic site, the negative influence which Entwistle (2014) referred to was nevertheless observed: over-lighting of elements other than the historic site was so severe that even the historic site suffered.

8.4.3.7   Avoiding overly theatrical lighting

It is also highly important to avoid lighting that is overly theatrical in historic sites. The findings of this study can be interpreted such that overly theatrical lighting results when light comprises excessive numbers of colours and there is too much dynamic light. These characteristics were found to destroy the authentic sense of place in historic sites. Hong (2007) in her thesis suggests that lighting should include visual variety in design. She states that this could be met through the use of an automated colour-changing system featuring LED and neon lighting. She also explains that, while little colour variation can result in a dull space, too much variety across different colours and moving lights can also result in visual clutter, and so a balance must be struck. Nasar (1988) also believes that too much sensory stimulation in a setting can

result in sensory exhaustion. Such a finding could explain why using too much light and colour in an exaggerated manner is not suggested. Although it is sometimes the case that these lightings may seem exciting and interesting to tourists, they destroy the identity, character and expression of the building, and with it any sense of place. This study therefore suggests that lighting designers must use light responsibly and consider carefully the outcomes of the final design.

8.5 Summery and Conclusions

As outlined in Chapter One, this research aimed to respond to three sub questions which were addressed through the findings. Accordingly, the first sub question which is "What are the benefits of developing a lighting scheme through the placemaking process in historic sites?" was addressed by the combination of Theme One: Placemaking: Benefits and driver, subthemes: 1)the benefits of placemaking process and subtheme 1) along with Theme Three: The Principles of Lighting for Historic Places 1) the effects of lighting in historic places through placemaking from as presented in this chapter. The second sub question noted in section 1.2 is "What aspects of historic sites must be considered to facilitate a successful placemaking process for these sites?" this was addressed through the second subtheme of theme One which is "People's roles as a vital aspect of placemaking" along with Theme Two: Historic Site as the medium for placemaking which included two subthemes: 1) three essential aspects of management to consider for placemaking in historic places, and 2) considering authenticity in the lighting of historic sites in placemaking. In fact, three main aspects were found in respond to this sub question which included management aspects of historic sites, people's role and engagement in a placemaking process, and how authenticity must be considered in the historic site to result in successful placemaking.

Finally, the third sub question being "What aspects of lighting must be considered in the placemaking process for historic sites?" was responded through the second and third subthemes within Theme Three: The Principles of Lighting for Historic Places. These were lighting design considerations for historic sites in the placemaking process, and considering essential characteristics of light for historical sites in the placemaking process.

By responding to these three sub questions though the interpretation and discussion of the findings and relevant research, this study addressed the research question of "**What are the design principles for lighting historic sites in the placemaking process?" and develops lighting design principles for historic sites through the placemaking process**. These principles are offered as a framework for lighting designers working on historic sites in relation to the consideration of placemaking. Policymakers working with historic sites may also seek to use these findings in setting regulations for the lighting of historic sites. So, the final chapter will present the core conclusions based on the discussions presented in this chapter by answering to each research question and will present the main contributions to knowledge by presenting the relevant definitions and the lighting design framework for historic sites' placemaking.

Chapter Nine: Conclusion

This research presents lighting design principals for historic sites through the placemaking process. As mentioned in Chapter One: Introduction, most of the world's population live in cities which makes it important to improve the quality of life in them. As explained in Chapter Two, placemaking is the process which aims to improve the urban spaces, resulting to quality of life. while the importance of historic sites in cities is explained in the introduction and Chapter Four, in Chapter Three, lighting is introduced as an effective tool to facilitate placemaking in historic sites. Accordingly, as introduced in the introduction chapter, section 1.2, this research responded to the following research sub-questions based on the findings:

9.1 What are the benefits of developing a lighting scheme through the placemaking process in historic sites?

This research demonstrates how lighting can be used as an effective feature in historic sites in the process of placemaking. In this regard, the results gained in relation to "the benefits of the placemaking process" (section 8.1.1) and "the effects of lighting historic places through placemaking" (section 8.3.1) can be used to address this sub-question. As has been evidenced through the pre-existing research and primary research presented in preceding Chapter One: Place, Space and Placemaking, and Chapter Seven: Interpretation and Discussion, some of the most important advantages of lighting in historic sites are similar to the benefits of placemaking in these sites according to both the research findings and the literature. Developing a well-designed lighting design for historic sites can have many economic benefits for society, which is one of the main outcomes of placemaking projects. Furthermore, lighting can visually enrich the historic site during night-time, which has been found to affect quality of life positively. Apart from economic and visual benefits, lighting can also have educational benefits in relation to the interpretation of narratives and the history of the site in terms of how these are conveyed to people, helping to cultivate a sense of meaning among visitors and residents. One of the outcomes of placemaking was found to be that the historic site will gain value and meaning amongst people such that the site can gain an identity. Lighting can therefore be used as an important tool in conveying these meanings and values. The lighting of historic sites has the potential to build

emotional attachment to the site among people, which is one of the main goals of transforming a space into a place.

As discussed in section 8.1.1.1, another important outcome of placemaking is that it encourages social engagement with particular sites within cities. According to the analysis presented in sections 8.3.1.1 and 8.3.1.6, lighting historic sites during the night can attract people's attention and encourage people to visit these settings while also facilitating the hosting of social engagements and gatherings onsite. Furthermore, through attracting increased levels of attention, lighting can breathe life into such settings and protect them from vandalism and antisocial behaviours. In other words, lighting previously forgotten sites can assist with reducing harmful behaviour, 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 the various ways mentioned above. This raises the question of what aspects should be considered to reach the appropriate lighting design that can achieve those benefits. This research suggests that, while there are lighting design characteristics and considerations that require to be taken into account for a suitable lighting design in historic sites, there is also a need to consider three specific aspects of placemaking conducted in relation to historic sites. These, taken together, constitute the response offered to the following sub-question:

9.2 What aspects of historic sites must be considered to facilitate a successful placemaking process for these sites?

This research highlights three central points that a placemaking process must consider in relation to historic sites. Firstly, it is necessary to consider certain aspects of management in the placemaking process for the lighting of historic sites. These aspects of management include engaging different groups of experts, designing as part of a masterplan, and developing localised lighting strategies. This research therefore finds that historic sites are important across a wide range of viewpoints and experts from different disciplines must be consulted with a view to allowing effective placemaking project to occur. Furthermore, the lighting design must work as part of a placemaking project masterplan. This way, the lighting can work with all the other elements and

characteristics of the site, the region and even the city more generally. In addition, every city should develop its own lighting strategies, which should be considered within the design process. Otherwise, each lighting project may be constructed in accordance only with its own approach, which may give rise to visual incoherence, damage to the authenticity of the place and outright prevention of a sense of place being cultivated.

The second point relating to the historic site that must be considered to allow a successful placemaking project to occur is that the authenticity of the historic site should be preserved through the lighting design. It is not the position of this research that lighting requires to be authentic in terms of the tangible factors of authenticity, which, in lighting design, refer to reproduction of the historic sites' traditional forms of lighting (which would include e.g. significant dark space and, in the case of many historic sites, the use of fire torches and candles). Indeed, the adoption of such a conservative approach would run contrary to placemaking principles. Instead, this research suggests that intangible authenticity should be maintained through lighting design in historic sites. Lighting should facilitate placemaking while respecting UNESCO designations. In this regard, being authentic means using lighting responsibly within historic sites, telling the stories about the history of the site, representing the meanings of the site to people using light, and illustrating the values that the site carries. It is also the position of this research that, when a site has served a function in the past that would nowadays be considered negatively, in such cases, for the placemaking process, greater levels of artistic license should be used with the lighting to be installed such that a more pleasant and attractive place for people results. It is therefore concluded that, to build a successful placemaking project for a historic site, lighting should consider intangible authenticity, together with positive authentic values. In other words, lighting does not need to consider tangible authenticity to reproduce the past, and if the site has played a negative role in the past, the lighting used does not need to be authentic to that aspect of the past.

The third of the three points relates to considering the role of people in the placemaking process. This grew out of the first theme, pertaining to placemaking aspects as an essential consideration in relation to the lighting design of historic sites

for a successful placemaking project. This research argues that the role of people should be considered in two different ways. Initially, the people who use the site must be studied carefully, and the groups that are to use the site (in terms of abilities, age groups and requirements) and the activities that they engage in within the site must also be considered in the lighting design. In other words, if certain groups of people are potential users of the site, the lighting scheme should take their needs into account. Furthermore, the activities that the people are found to engage in, as well as activities that are regarded as potentially beneficial, should be studied, and the lighting should facilitate engagement in these activities to reach the corresponding placemaking goals.

In addition, it must be considered whether the placemaking goal for the target historic site is to attract more tourists or whether there is instead a need to focus on the needs of local people. This relates to the fact that, if a site is already frequented by many tourists and the lighting is also constructed with a view to attracting tourists, the site may experience over-tourism and associated negative effects. So, studying the number of tourists visiting the site yearly and considering whether this needs to be promoted (or whether it would instead be beneficial to focus on local people's needs) constitutes an important placemaking decision to be considered.

The second point regarding consideration of the role of people in the placemaking process relates to engaging people in the project. It is the position of this research that people's opinions, feelings and values should be gathered as part of the placemaking process; however, their engagement should take the form of gaining insight into their ideas and understanding their values. Furthermore, in order to collect more productive data from people in relation to the placemaking process, where needed, people can be trained and educated with knowledge specific to the historic site.

Points relating to management, the authenticity of the historic site and the role of people are all essential parts of the placemaking process for historic sites. While all three derive from the general practice of placemaking in relation to historic sites, lighting, as the tool for placemaking in these settings, does figure extensively in the overall process. Accordingly, lighting gives rise to its own matters that require to be considered. This relates to the third sub-question, which is as follows:

9.3   What aspects of lighting must be considered in a placemaking process for historic sites?

This research suggests that there are different sets of lighting-related points that need to be taken into account to facilitate the placemaking process for historic sites. These relate to how lighting should be used and what aspects of design need to be considered, as well as lighting characteristics that should be pursued or avoided. Having regard to these design aspects and characteristics along with the three considerations for historic sites will serve to encourage a successful placemaking process for the historic site.

This research suggests that, similar to the process of composition in language, lighting can contribute to the composition of various elements within the built environment to convey a narrative. The narratives that lighting should present in the historic site should derive from the history of the site. This story can influence how the site is perceived by bringing or enhancing the meanings lying within the stories that relate to the historic site, thereby enriching the experience of visitors. Historic sites have specific meanings and values for people, and these must be considered in the design process. Accordingly, if the site has cultural values, they should be emphasised in the lighting design. Alternatively, if there are certain historic stories associated with the site for people, those should be conveyed through the lighting design within the process of placemaking. It should be noted that no matter what the lighting design is, it will convey an interpretation of the historic site. The interpretations that are conveyed through the lighting are partly influenced by the cultural background of the people as well as the architectural features of the site that carry their own meanings and values. Thus, in addition to choosing a relevant and meaningful narrative that the lighting design is to present, the cultural features and architecture must be carefully studied in relation to the lighting design to consider what interpretation the lighting is to convey to visitors. This must be done to ensure that the display as a whole falls in line with the desired meanings and values.

The lighting design should be crafted so as to create an atmosphere within the historic site. The overall mood can be harmonised so as to mesh with the atmosphere created through the lighting design. At the same time, if the lighting does not create the appropriate atmosphere by considering people's mood and values, this can destroy the

original atmosphere of the site. On the one hand, although half a century ago, it was suggested that it was beneficial to illuminate historic sites in a bold manner to enhance the architecture and draw as much attention as possible to these sites, it is the position of this research that over-lighting an entire site and all its architectural features using floodlights must be avoided. This method of lighting cannot create a unique atmosphere for a historic site and will likely fail to provide any remarkable emotional or aesthetic sense. Such an approach can also result in the historic building losing its character, identity and sense of materiality. On the other hand, and at the same time, lighting schemes for historic sites should not be designed such that they are uniform, for such an approach will undervalue the specific features of the historic site. Instead, lighting must be used to create layers within the historic site. Instead of over-lighting the whole architecture, lighting should enhance certain parts of the buildings and, with the use of contrast between light and shadow, the place can be presented in a more visually interesting manner, providing a space for people to explore and discover. Using the lighting in this way can also assist with making the historic site more attractive and exciting for visitors, with this being one of the primary goals pursued within the practice of placemaking. While making a historic site exciting and attractive by creating layers with lighting is recommended, overly theatrical lighting is not recommended. This is because excessive levels of colour and too much dynamic light can destroy the authenticity of the place, harming its sense of identity and character. This lighting, although it may serve to attract tourists through its exciting visual attractiveness, can result in excessive levels of sensory stimulation and exhaustion. Accordingly, increasing the attractiveness of a site through lighting should be engaged in responsibly, respecting the authenticity and values of the site. While overly theatrical lighting should be avoided, it is important for the lighting design to have harmony with the historic site in accordance with the practice of placemaking, for such an approach supports the meanings within the site and yields an improved understanding and appreciation of the understanding of the setting. However, this research suggests that harmony in lighting does not necessarily entail repeating the same colours that already feature within the architecture; rather, it involves developing a lighting design that is in harmony and in line with the meanings and values of the site, helping to convey the appropriate narratives.

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. While it is sometimes suggested that entire sites be lit up to maximise safety, this research recommends that over-lighting can give rise to negative effects upon people's perception of the safety of the area, giving rise to a sense of potential danger in the spaces adjacent to the target site. Safety should therefore be considered not only in relation to the historic site, but also the surroundings of the site. It is also essential to consider functional aspects of the surrounding area and ensure that the site is accessible in furtherance of the goal of safety. 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 research 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.

Additionally, the activities that all user groups may engage in must be considered in relation to the lighting design to ensure successful placemaking. Those activities are part of what encourages people to visit the site, and includes 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. On the one hand, one of the characteristics of light that this research suggests as being useful within the placemaking process for historic sites is malleability. Modern lighting features can facilitate various outcomes without the need to change fixtures. This characteristic must be taken advantage of in these sites, to change the appearance of the lighting design and facilitate people's engagement in special occasions and events. On the other hand, 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 minimised as far as is practical.

At the highest level, this research points to a number of essential points that must be considered as lighting design principles for historic sites. By considering these historic

site-oriented points together with the characteristics of and considerations relating to lighting, it is possible to design lighting schemes for historic sites in an informed manner that produces a well-rounded and appropriate result. While each historic site has its own specific requirements and there will always be the need to follow region-specific guidance and rules on lighting, these principles must be modified on the basis of the historic site and crafted so as to mesh with the process of placemaking.

9.4 Contributions to knowledge

As introduced in the introduction chapter, this research has responded to the research question of "**What are the design principles for lighting historic sites in the placemaking process?"** by responding to the three sub-questions. Accordingly, the following contributions to knowledge are the final outcomes of this research:

9.4.1 lighting design principles for placemaking in historic sites

lighting is a significant design feature for placemaking in historic sites. A successful lighting scheme effectively improves placemaking through the encouragement of social engagement and communal activities in historic sites at night-time. It achieves educational benefits for the people through conveying interpretation of narratives and the history of the site, to cultivate a sense of meaning and value for people. The impactful lighting results in visual enrichment and builds emotional attachment to the site amongst people, and through attracting more people to approach the historic site and increasing the level of attention, it breathes life into the historic site which consequences in additional protection from vandalism and reduces antisocial behaviours. Such lighting brings economic benefits to the historic site, all of which are effective and essential aspects of the placemaking process.

the following diagram presents the main lighting design principles which are aught to be taken into account by lighting designers and related professions when designing lighting schemes for historic places through placemaking:
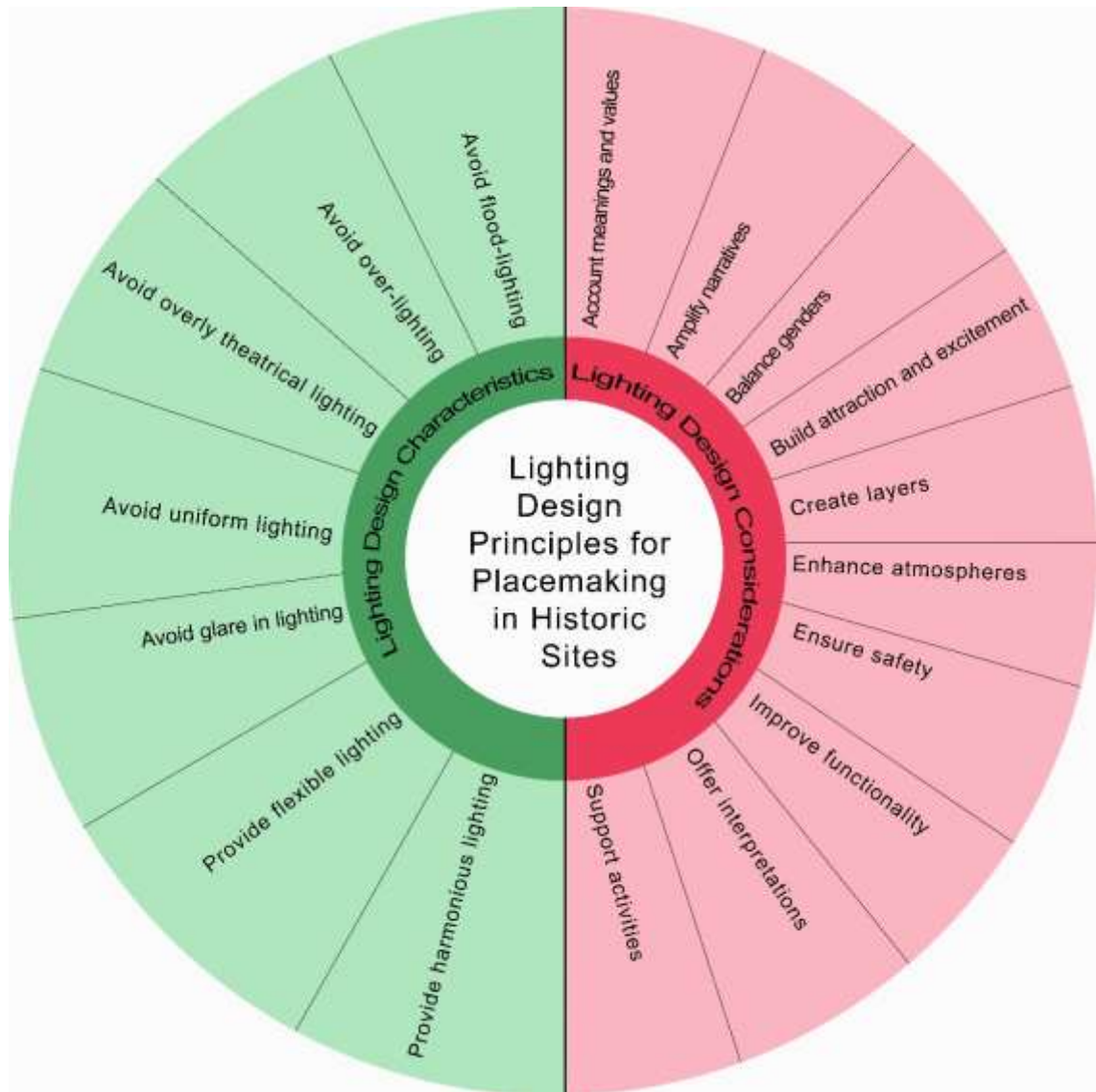
Figure 9-1 Lighting Design Principles for Placemaking in Historic Sites

9.4.2 Definition of Placemaking

Placemaking is the process of engaging different groups of experts as well as the locals and visitors to gain their overall values and opinions, to achieve a site's development framework based on localised strategies encountering the city's own values, meanings and considerations, with special respect to its intangible authenticity, and is part of a masterplan which enables everything to function together, considering the identity, the history, the architectural materials as well as the human requirements, the culture, the social aspects, the activities, the overall quality of life and safety, all together to forming a place.

9.4.3 Lighting Design Framework for Historic Sites' Placemaking

This research finds that in addition to the lighting design principles which focus on the lighting characteristics and design considerations for lighting, in order to reach a comprehensive lighting design project which does achieve placemaking in historic sites, other factors also need to be taken into account. These are known as the lighting design frameworks which generate generated from the definition of placemaking found in this research. Accordingly, three major aspects build this framework which include intangible authenticity, management aspects and engaging different groups of people in the project. This lighting design framework should be used along with the lighting design principles' diagram by lighting designers and other professionals contributing to placemaking in historic sites to consider in their development and the lighting design process. The aspects of this framework are presented in the following diagram as the key qualities to be considered in a placemaking project of lighting in historic sites:
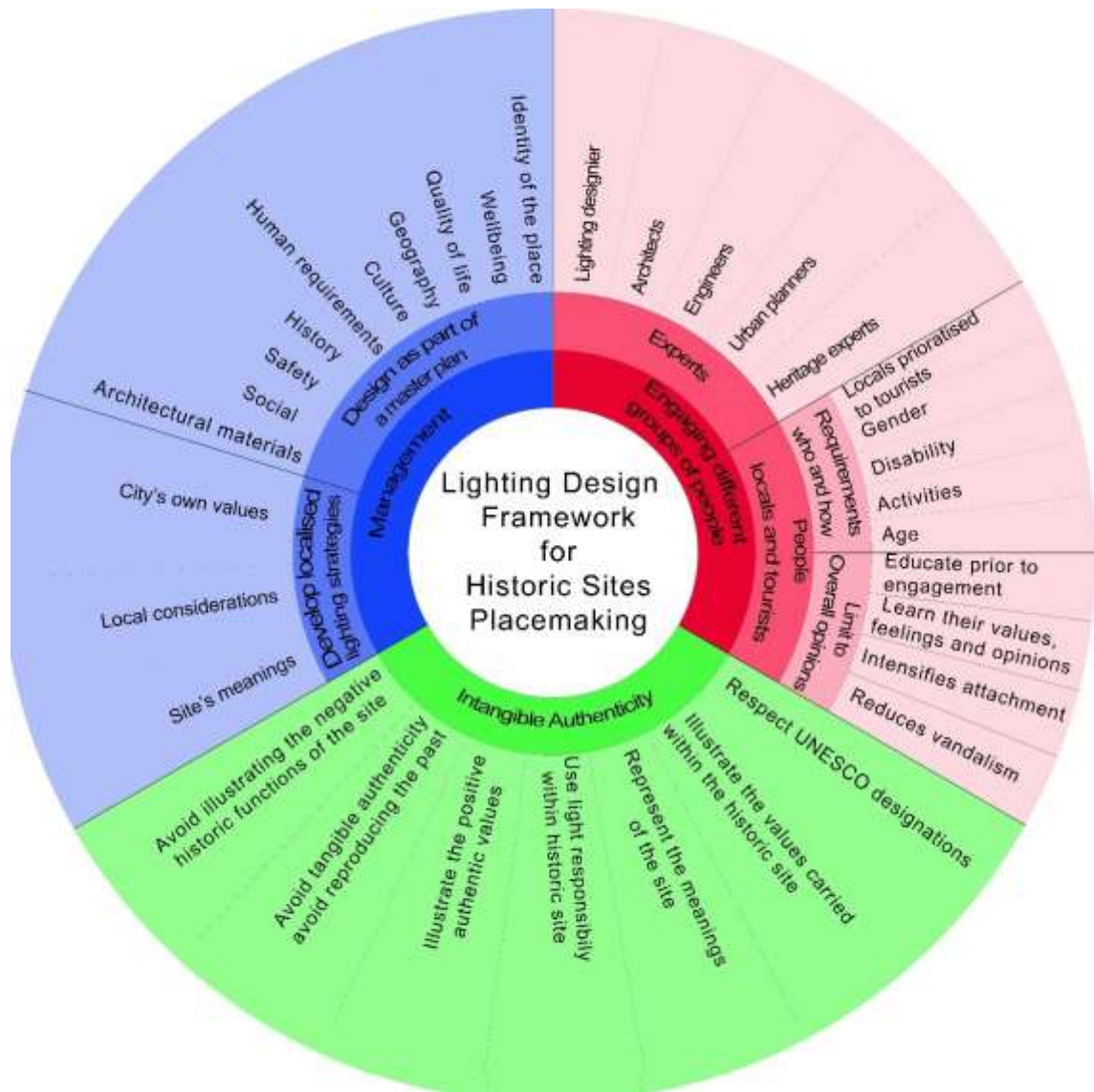
Figure 9-2 Lighting Design Framework for Historic Sites' Placemaking

9.5 Limitations of the study

Notwithstanding the robust patterns emerging with the data obtained within the context of this study, there are certain limitations that fall to be acknowledged. The first limitation relates to the constraints imposed by the ongoing COVID-19 pandemic. The associated travelling restrictions meant that visiting further sites and approaching further individuals so as to interview them was made significantly more difficult, if not precluded altogether. It should be borne in mind, of course, that considering only these two case studies did mean that a more intense focus could be gained in respect of the two sites considered.

This research also has limitations in relation to accessing data in other forms. Ideally, more interviews would be held with heritage experts from UNESCO to gain more information about their points of view regarding the lighting of historic spaces as well as their opinions on the initial findings of this research. It would also have been beneficial to access the lighting plan for Naghshe-Jahan-Square. This project was hampered to some extent by human-related factors in that, while requests were sent out to extend invitations to interviews and to obtain the requested information, no replies were forthcoming.

The data collection procedure and the interview questions utilised within this research were formulated mainly on the basis of the secondary research. Through the interviews, many topics were raised that, after thematic analysis and interpretation, made salient several important aspects of lighting that it would have been optimal to investigate on their own terms. Such a detailed investigation of the different aspects of lighting would fall out with the scope of the present study, especially given the need to conduct an analysis of lighting of historical sites and placemaking in a manner that was sufficiently focused.

The final limitation to consider is, in some respects, also a strength of this particular area of research, this being the relative newness of the approach of linking lighting to placemaking as applied to historic sites. The consequence of this is that there is a dearth of comparable prior research to draw on. In relation to certain aspects of what was identified as being significant within the present study (e.g. theatrical lighting in

historical sites, the social influence of lighting), no relevant prior scholarly content could be identified, meaning that what is presented here is, for the most part, original. It must be borne in mind, however, that this limitation of the present study also serves to highlight the opportunities that this line of enquiry presents, and to underscore the original contribution that this research project makes.

9.6   Recommendations for future research

Research into architectural lighting design is a relatively new area, meaning that there are significant gaps in the research that require to be addressed. Furthermore, much of the research into lighting has focused on its technical aspects and studied lighting from the point of view of engineering. This research emphasises that the humanistic aspects of lighting must also be considered, and while there is a tendency to focus only on the quantitative aspects of light in settings, this research suggests that lighting should also be studied in terms of its qualitative features. This research has pointed to some of the relevant qualitative aspects of lighting such as how to consider authenticity with lighting, considering meanings and values with lighting and creating layers with light, and so it is recommended that these aspects be studied in more detail in the future.

One especially striking aspect of the secondary research is the fact that the different relevant disciplines of placemaking, heritage sites and lighting design are researched on a largely independent basis without there being much awareness of the influence that these fields have on each other. For instance, there are some organisations working on placemaking, while others focus only on the lighting of public spaces. There is a clear gap in terms of how these disciplines influence each other. This research has considered some of the most important aspects that should be taken into account for connecting these elements and issue recommendations for lighting historic sites in the context of placemaking. However, a multidisciplinary community could be fruitful to organise, with experts from different backgrounds of lighting, sociology, urban planning and heritage all contributing in order to form a productive infrastructure to share their points of view about the lighting of historic sites so as to realise the placemaking process maximally well.

This research also identified a number of recommendations referred to in section 9.2 to apply to any historic site as a whole. Further research could narrow down on specific contexts to generate specific recommendations tailored for each environment. Accordingly, in building on this research, future studies could focus on different regions and countries and consider the cultural aspects and the location of the sites in question to modify the recommendations according to their own requirements.

After considering the data, a comprehensive list was presented in this research in sections 8.3.2 and 8.3.3 of the points that should be considered in the lighting design of historic sites within the placemaking process. While these approaches are introduced and explained, further research could be conducted on each of these approaches to enrich how they could be considered in terms of their implementation. Furthermore, although this research finds that quantitative lighting characteristics may change site by site, further research could be undertaken by measuring these such as Colour Rendering Index, Illuminance and Luminous Intensity, and linking them to the qualitative data gathered through the interviews and observations, producing a list of requirements relating quantitative light characteristics for these sites.

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Appendix A: Semi-Structured Interview for Lighting Designers

1a- Are you aware of how lighting schemes can be used in historic sites to enhance the environment?

1b- Does lighting have to represent the historic function of the site as it was used in the past?

2 - Should the experience at night replicate the daytime experience or should it offer something different?

3a- Do you think light can influence the identity of historic sites?

3b- Please explain how light can impact on the identity of historic sites?

3c- can you give me an example please?

4a- Do you think it is the role of the lighting scheme in historic sites to work as interpretation?

4b- Can lighting provide narrative and drama? In other words, can it tell a story or act as a theatre?

4c- can you give me an example?

5 -What do you think should be the priority in lighting for historic sites (Social, cultural or political)?

6- In the lighting of historic sites, which do you think is more important, lighting to create a space or lighting to create a place? Why?

7 -Which characters of light have the potential to change the identity of place?

8a- Do you think the lighting scheme for historic sites should be different from that for public spaces?

8b- If yes, what it the main approach to lighting schemes in historic spaces which makes this difference?

9 -Do you think light can influence the behaviour or mood of people? How?

10 -How important is the opinion of the local community and their culture in lighting design? Why?

11a- What do you think is the potential of lighting in historic sites?

11b- Can you think and some good examples?

12- Do you believe there is such a thing as bad lighting for historic sites? If yes, please explain.

13a- Do you think there is anything I should be asking?

13b- is there someone else I should interview?

Appendix B: Questionnaire for Saint Avit Senieur, France

Madame Monsieur

Abbaye de Saint-Avit-Sénieur

Bonjour

Je suis étudiant en design light à l'université Napier en Ecosse le sujet de ma thèse est le design light en monument historique de patrimoine mondial enregistré à l'Unesco d'où l'église de votre village est enregistrée à l'Unesco en tant que patrimoine mondiale et ce site a un programme pour design light peut etre un bon exemple afin de voir les avis sur design light vos réponses peut m'aider beaucoup dans mon analyse de thèse je vous sollicite de bien vouloir répondez au questionnaire très attentivement. je vous remercie par avance pour le temps consacré pour répondre à cette questionnaire.

1- quel age avez vous ?

2- sexe ?   Femme   homme

3- quelle est votre profession?

4- À quelle fréquence visitez-vous ou passez-vous sur le site pendant la journée ? Pourquoi vous visitez dans la journée ?

5- À quelle fréquence visitez-vous le site pendant la nuit ? Pour quelle raison vous visite le site pendant la nuit ?

6- Quel est le temps préféré de l'année pour vous de visiter ce patrimoine ?

7- avez-vous une implication professionnelle dans les décisions d'éclairage ? Si oui, veuillez expliquer quelle implication?

Désign

1- le concepteur de l'éclairage vous a-t-il déjà approché pour obtenir votre avis sur l'éclairage du site?   Oui   Non

2- Souhaitez-vous que les concepteurs aient votre opinion sur l'éclairage du site?

4- pensez-vous que l'éclairage contribue à l'atmosphère du site?   Oui   Un peu   Non

5- pensez-vous que l'éclairage sur le site affecte l'autencité du site?   Oui   Un peu   Non

6- comment l'éclairage change le site?

3- veuillez montrer quelles parties de l'éclairage sur le site vous intéresse le plus en numérisation les images ci-dessous de un à cinq.

Site

1- pourriez-vous décrire l'atmosphère du site au cours de la journée ?

2- pourriez-vous décrire l'atmosphère du site la nuit ?

3-est ce que l'éclairage de site a une experience à part pour visiter le site pendant la nuit par rapport de visite dans la journée ?   Oui   Non

4- est ce que l'éclairage sur le site vous a encouragé à le visiter plus la nuit ? Oui   Non

5- pensez-vous que l'éclairage de site a changé l'identité de site? Si Oui comment l'éclairage change le site?

6- pensez-vous que l'éclairage du site est conçu pour un genre spécifique ? Non Oui si Oui lequel sexe ?

7- pensez-vous que l'éclairage du site est conçu pour être apprécié par un âge spécifique ? Non Oui si Oui lequel période d'age Moins 15 ans 15 à 30 ans 30 à 45ans 45 à 60 ans 60 ans et plus

8- Pensez-vous que la musique et le son sur le site pourraient améliorer l'effet du système d'éclairage? Or Or do you prefer the lighting schrne without the music

9- vous sentez-vous en sécurité sur le site? combien de ce sentiment ou ne pas se sentir en sécurité peut être attribué à l'éclairage ?

a l'éclairage sur le site la nuit vous donne une expérience différente sur le site la nuit par rapport au jour

10- Combien pensez-vous que les installations d'éclairage sur le site ont encouragé les touristes à visiter ce site ?

beaucoup

quelque peu

neutre

pas tant

pas du tout

11- quel aspect de la vie pensez-vous qu'un système d'éclairage devrait prendre en compte lors de l'allumage de ce site ?

Social,politique, historique, culturel, religieux, tourisme

Esthétique

1- veuillez indiquer lequel des éclairages ci-dessous vous plaît le plus

2- quelle couleur aimez-vous utiliser à l'éclairage de ce site ?

Rouge

bleu

blanc

vert

jaune

3- Aimez-vous l'ensemble du site à allumer ou préférez-vous seulement des pièces telles que des colonnes , des murs, des entrées, des statues ?

a-à allumer des pièces entières du site

b-à allumer seulement des pièces .

4- avez-vous déjà lu les notes qui sont projetées sur les murs ? Oui Non

5- pouvez-vous montrer quel type d'éclairage vous souhaitez utiliser pour allumer ce site en choisissant parmi l'image ci-dessous. choisissez autant que vous voulez

6- Pensez-vous que l'éclairage du site crée ou raconte une histoire ? si oui, que pensez-vous de

l'histoire?

7- À quel point pensez-vous que l'éclairage de ce site devrait avoir un sens?

a-je ne me soucie pas de la signification

b-je pense qu'il devrait inclure un sens profond

c- l'aspect esthétique est important et ça devrait être sans signification

8- À quelle fréquence pensez-vous que l'éclairage du site devrait changer avec le temps?

a- ça devrait changer chaque année

b- ça ne devrait pas changer du tout

c- il devrait être changé toujours

Si oui, pourquoi pensez-vous que le changement est nécessaire?

9- pensez-vous que l'éclairage est aussi important que l'architecture dans cet environnement? si oui pourquoi?

Je vous remercie de consacrer votre temps pour repondre à cette questionnaire.

Appendix C: Semi-Structured Interview for Heritage Experts

1a- Are you aware of how lighting schemes can be used in historic sites to enhance the environment?

1b- Does lighting have to represent the historic function of the site as it was used in the past?

2 - Should the experience at night replicate the daytime experience or should it offer something different?

3- Do you think light can influence the identity of historic sites?

4a- Do you think it is the role of the lighting scheme in historic sites to work as interpretation?

4b- Can lighting provide narrative and drama? In other words, can it tell a story or act as a theatre?

5 -What do you think should be the priority in lighting for historic sites (Social, cultural or political)?

6- What do you think is the potential of lighting in historic sites?

7- Do you think there is anything I should be asking?

8- is there someone else I should interview?

Appendix D: Semi-structured Interview, Isfahan

1- ایا طراح ها در مورد نور پردازی میدان نظر شما را پرسیده اند؟

2- آیا دوست دارید که نظر شما را هم جویا بشوند؟

3- کدام بخش از سایت بنظر شما جلوه بیشتری در شب دارد؟

4- به نظر شما طرح روشنایی در ارتباط با محیط پیرامونی چقدر موفق بوده است؟

5- ایا نور پردازی محیط شما را ترغیب کرده که شب ها هم سری به میدان بزنید؟

6- بنظر شما نور پردازی سبب شده که هویت میدان تغییر کند؟

7- آیا طرح نورپردازی در سایت سبب شده که شما تجربه متفاوت تری از روز داشته باشید؟

8- ایا فکر میکنید که نور سایت مناسب یک جنس خاص است؟ اگر بله برای کدام جنس؟

9- ایا نور سایت برای سن خاصی است؟

10- ایا فکر میکنید که نور سایت سبب ایجاد حس امنیت در شما شده؟

11- بنظر شما نور پردازی سبب جذب توریست شده؟

12- بنظر شما ترکیب صدا با نور میتواند سبب جذابیت بیشتر شود؟

13- دوست دارید در هنگام طراحی نور سایت کدام بخش از زندگی مردم در نظر گرفته شود؟

14- کدام دمای نوری را دوست دارید؟

15- دوست دارید از   چه رنگی در سایت استفاده شود؟

16- دوست دارید تمام سایت روشن شود یا فقط اجزای بنا مثل گنبد ها، ستون ها و یا گلدسته ها؟

17- دوست دارین که پشت ایده طراحی نوری معنی و منظوری باشد یا علاقه خاصی ندارید؟

18- بنظر شما هر چه مدت یکبار باید نور بنا تغییر کند؟

19- بنظر شما نور به اندازه بنا اهمیت دارد یا اولویت بر بنا است؟

20- دوستدارید که در سایت از ویدئو مپینگ استفاده شود؟

21- ایا نوشته ای که روی دیوارها با نور دست شده میخوانید؟