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POTENTIALS OF LIGHT IN URBAN SPACES DEFINED THROUGH SCENOGRAPHIC PRINCIPLES

Mette Hvass and Ellen Kathrine Hansen

ABSTRACT

In urban spaces, lighting is often designed based on legal requirements that ensure it is possible to navigate and feel safe. This article examines how scenographic principles for the use of lighting in the theatre can provide inspiration for designing lighting that supports everyday activities in urban spaces. In scenography, light is a poetic tool that enhances the experience, which can be defined as a relation between the actor, the space, and the light. Hereby, the light creates an atmosphere that amplifies the drama. The focus of this article is to investigate whether it is possible to use scenographic principles to create a connection between space, people, and light.

Through a literature search, theories are explored within scenography, urban design, social science, and lighting design. A literature analysis leads to the definition of the architectural and social potential of light. The aim is that these potentials will inspire the design of lighting in the urban context by including the visual connection among people, space, and light, which we know from the theatre, and thereby provide an improved visual and social experience of the illuminated urban space.

KEYWORDS

Urban lighting design, scenography, potential of light

INTRODUCTION

The intention of unfolding the potentials of light in urban spaces is to create awareness of how light can support the architectural and social potentials of the urban nightscape. These potentials may be used for analysing and designing lighting and lighting control in support of everyday life in the nocturnal urban environment.

Outdoor lighting around everyday activities in the urban space is often designed to comply solely with the requirements of brightness levels to help people navigate and feel safe, while perceived qualities of light are not utilized and adapted to the use of the city. Roads, sidewalks, bus stops, et cetera, are illuminated in relation to functional legal requirements for traffic; the illumination of everyday activities and the perceived qualities for pedestrians are often not considered and adapted to the urban space. On the other hand, in the theatre, scenographic lighting is designed to create an aesthetic expression and a mood that amplifies the drama of the action and creates coherence. Lighting in theatres is carefully designed considering the space, the actors, and the content of each scene. Lighting in a theatre is used as a poetic device.

According to the lighting designer Hervé Descottes, the instruments of light can be divided into six principles of lighting: illuminance, luminance, colour and temperature, height, density, and direction and distribution.¹ These light principles are measurable and can meet regulatory requirements for minimum lighting values in urban spaces. However, lighting also has non-measurable potentials that provide aesthetic expressions and atmosphere to a space. Christopher Cuttle calls this ‘visibility vs appearance’—that is, lighting designed to fulfil the visual performance needs (measurable) versus lighting that enhances the appearance of surroundings (non-measurable).² In scenography, light is used exclusively to enhance appearance and to convey a message in a drama. Therefore, scenography was used as inspiration for this study.

In this article, the term *scenographic principles* refers to how lighting is an integrated tool in the theatre. The term ‘scenography’ is of Greek origin; *skēnē* means ‘stage/scene building’ and *grapho* means ‘to describe’. In short, the two terms point to the act of ‘describing the stage’. In relation to the focus of this article, the scenographic principles refer to how to use the aesthetic and affective values of light to define a correlation between actor, space, and light. Gernot Böhme uses scenography to describe how atmosphere, meaning the tone or mood of a place or a situation, has been produced in the

theatre throughout history (e.g. with light). When specifically talking about light on stage, Böhme states that ‘the mastery of the light and sound through electrical technology . . . *tunes* the whole performance . . . [and] has made it possible for the art of the stage set to leave the stage itself and spill over into the auditorium, or even into space itself.’³

Urban space and life provide the framework for this study and the everyday activities that take place in the city after dark. The study asks how we can illuminate complex urban spaces and movements through space, inspired by scenographic lighting principles, so that light supports people’s actions and provides an aesthetic complement to the visual experience of moving through the city.

The term *lighting potential* refers to the ability of lighting to create space, mood, and atmosphere. Lighting in urban spaces is often designed to meet functional needs, while scenographic lighting aims to reinforce the perceived qualities of light and take advantage of the aesthetic and affective values of lighting.

Aim

This study investigates differences and similarities between principles of scenographic and urban lighting through literature. The aim is to take inspiration from scenographic lighting, where light is used as an aesthetic and affective tool that creates moods and atmospheres and enhances a play. The intention is to translate this knowledge into potentials for how lighting around everyday activities in the urban space can be designed to enhance architectural qualities and support social interaction.

Method

To be able to collect knowledge in relation to the outlined problem, an overall research question was defined:

How can principles of scenography inspire the definition of the correlation between urban space, people, and lighting and thereby describe architectural and social potentials of light in urban spaces?

To answer the question, a literature search was conducted based on knowledge from literature and research within the fields of scenography, urban design, social science, and lighting design. As shown in Figure 1, the literatu-

re is divided into three themes: 1) scenography and scenographic lighting, 2) urban space and life, and 3) urban lighting design. The selected literature is a mix of classics within urban design and sociology supplemented with literature on lighting design and scenography. To search for knowledge about the link between scenographic lighting and urban lighting, the survey was supplemented with a literature search of peer-reviewed papers using the search words 'scenography', 'urban space', and 'lighting design'. To collect knowledge from a broad range of research fields, the ProQuest, Scopus, and Web of Science databases were chosen. The search resulted in twenty peer-reviewed papers, four of which were included in this article. To add supplementary literature, a literature search was conducted in Google Scholar using the search string 'scenography and light in the urban space'. Fourteen papers and texts were identified and three peer-reviewed papers were included.

The papers were chosen because they related to the three themes and addressed the correlation between urban space, people, and lighting. The articles distinguished themselves by creating a link between Themes 1 and 2 by focusing on urban scenography and how the scenography or performance practice can be used as a lens through which to consider urban space and life.

The results from the search led to an analysis of the literature where the correlation between people, space, and light is discussed. A series of concepts was derived from the texts and collected in a selection of recommendations for lighting and for the use of the architectural and social potential of light.

LITERATURE ANALYSIS

Scenography and scenographic lighting

Traditional scenography has undergone major changes, from only being associated with the design of settings for a performance on a stage to now being able to assume many forms inside and outside of the theatre. Contemporary forms of scenography reflect the political, social, cultural, or ecological impact that scenographic interventions have through multisensory performance events that blur the boundaries between the audience and the actors. The characteristics of *expanded scenography*, as this development within scenography is called, are evolving rapidly, especially since the turn of the millennium.⁴

This development has also happened within scenographic lighting. In his book *Light: Readings in Theatre Practice*, Scott Palmer describes light as a

Known Literature and Research Literature on Scenography and Scenographic Lighting, Urban Space and Life, and Urban Lighting Design			
Authors	Theme 1 Scenography and scenographic lighting	Theme 2 Urban space and life	Theme 3 Urban lighting design
Böhme, G.	x		
Fischer-Lichte, E.	x		
Keller, M.	x		
McKinney, J. Palmer, S.	x		
Palmer, S.	x		
Gehl, J.		x	
Goffman, E.		x	
Jacobs, J.		x	
Jensen, O. B.		x	
Lynch, K.		x	
Brandi, U.			x
Cuttle, C.			x
Descottes, H.			x
Wasserfurth-Grzybowski, N. W.			x
Mende, K.			x
Narboni, R.			x
Search Results for ProQuest, Scopus, Web of Science, and Google Scholar			
Authors	Theme 1 Scenography and scenographic lighting	Theme 2 Urban space and life	Theme 3 Urban lighting design
Brejzek, T.	x	x	
Edensor, T.	x		
Gröndahl, L.	x		
Lavrinec, J.	x	x	
Sánchez, M. J. M.	x	x	
Thibaud, J. P.	x	x	
Wilkie, F.	x	x	

Figure 1. Matrix of texts relative to the three themes listed in the literature.

creative element in the theatre experience and explains how the technological development of light has had an impact on the use of light in theatre throughout history. Up until the end of the nineteenth century, the theatre scene was two-dimensional, because theatre lights were attached to the stage front edge and projected upwards onto the actors. In the late nineteenth century, the stage designer and theatre theorist Adolphe Appia was one of the first to combine his scenographic creativity with the latest lighting technology, thus managing to add three-dimensionality to the stage by means of light.

As cited in Palmer, Appia stated that ‘Light has an almost miraculous flexibility . . . it can create shadows, make them living, and spread the harmony of the vibrations in space just as music does. In light we possess a most powerful means of expression through space, if this space is placed in the service of the actor.’⁵ Palmer concludes, ‘So, here we have our normal, established hierarchy: The actor presenting the drama, space in three dimensions, in the service of the actor’s plastic form, light giving life to each.’⁶

Appia formulates a hierarchy consisting of the actor who presents a drama, the space in three dimensions, and the lighting that makes the interaction come alive. The actors and the play constitute the focal point, to which the space and light are related.

This hierarchy inspired the pointing out of the three components used in this article, here presented in relation to the urban comparison:

The actor is an individual (i.e. a pedestrian and his or her actions in the urban space).

The space is the urban space in the nightscape (i.e. urban facades, roads, and pavement, and objects and the materials they consist of).

The lighting is urban lighting design.

The actor presenting the drama is often the focus, or the scenographic lighting is planned to reveal details about the actor and the performance. Contrary to this, in the urban scene the functions of the setting, rather than the actor, are in focus (e.g. the distribution of sufficient light for a pedestrian to cross the road safely). The pedestrian in the urban space is both actor and audience, moving through a space or watching others moving through spaces. At the

theatre, lighting cues and dynamically programmed light are tuned to underline the drama, whereas the lighting in an urban space is controlled to fulfil regulations about a sufficient level of light.

The space in the theatre scene is illuminated from many directions. The materials and colours of the setting are dominant because of high contrasts and directed light, whereas the setting in the urban scene is lighted to facilitate transport functions. Although some buildings stand out to a viewer because of the light in the windows, the materials and colours of the facades and urban objects are generally blurred because of the diffuse and low-level light.

The light in the theatre scene comes from many angles, and directed light at a high light level creates shadows that help to define the forms of objects. The light and the programming of the light are designed to support the play and the actors performing. The focused light makes the audience look at the play and nothing else. The light creates an atmosphere, and a change in the lighting helps the audience understand and prepare for the next scene. In the urban scene, the lighting is designed to support the functions of the city and illuminate the pavement, the road, and urban functions such as traffic structures. Light from road lights is sometimes projected onto facades, making patterns of light that were not intended, blurring the surfaces of the urban space in the nightscape.

The following analysis is structured within the three components; actor, space, and light.

Actor

The aim of describing architectural and social potentials of lighting in urban spaces is to contribute to the creation of nightscapes that are not only functional but also liveable—such as by being more welcoming (densifying) and more conducive to social interaction. Safety is needed in the nightscape, and light can provide safety when designed according to the context. However, light can also enhance the social quality of meetings between people and create the basis for safer and better social interaction. Thus, lighting may make eye contact and mutually acknowledging nods more plausible or facilitate conversation while waiting for a bus. Lighting should be designed to support such meetings. Therefore, we need to analyse the visual perception of spaces. The following texts explain how sociologists and psychologists

analyse everyday social interactions and how the way in which we perceive our surroundings is part of a complete visual system, including our bodies and the surrounding spatial context.

The sociologist Erving Goffman developed a 'dramaturgy metaphor' as a tool to understand everyday social interactions in the city. With a reference to the theatre, he argued that 'social agents' play roles in accordance with more or less self-conscious scripts for social interaction in the urban space.⁷ Goffman talks of 'front stage' and 'back stage' regions of the city when describing the dividing line between public and private city spaces. In the front-stage identity, we perform in front of other people, while our back-stage identity is where we do not have to perform but can relax.⁸

Another concept used by Goffman in relation to face-to-face interaction in everyday life is 'face'. Everybody has a self-image—a 'face'—that they seek to communicate in social situations. This is how we 'read' situations and other people, by doing what Goffman calls 'facework' or face-to-face interaction.⁹ This theatre of everyday life applies one set of codes during daytime and another during night-time. In the dark hours, the illumination of such 'face' meetings between people should be taken into consideration.

Whereas Goffman's focus may be said to rest on eye contact and communication by means of facial expressions, James J. Gibson directs his attention towards our tactical perception of space. According to Gibson, visual perception is closely related to other sensory perceptions of the physical context: 'We are told that vision depends on the eye, which is connected to the brain. I shall suggest that natural vision depends on the eyes in the head on a body supported by the ground, the brain being only the central organ of a complete visual system.' When designing lighting for the theatre, thinking about the context (and actors' bodies in the context) is a part of making the visual image relate to the play. In his work with visual perception, Gibson defines the ecological laws of surfaces, which describe how we perceive surfaces and textures. Again, finding inspiration from the theatre, lighting can be adjusted in detail according to the material upon which the light is reflected, which is often not the case in the urban space.¹⁰

The movements of individual persons take place in the framework that an urban space provides. Pedestrians move on the pavement and at night-time in the areas that are lit. By analysing the rhythms of space, time, and everyday

life, both natural (daylight, time of year) and social (rush hour, weekends) lighting can be designed to support the movements of people or redirect them. The lighting system should be looked upon as a whole, a code that includes all information and is designed to support the ‘actors on stage’.

The texts cited in the following explain how sociologists, planners, philosophers, and researchers within performance studies analyse the dynamic rhythms and movements of people and the dynamics of light.

Addressing the everyday scope of actions of people in a city, mobilities and the ability of city planners to imbue urban spaces with meaning are the focus of this article. According to Ole B. Jensen, ‘mobilities are carefully and meticulously designed, planned, and staged (from above). However, they are equally importantly acted out, performed, and lived as people are “staging themselves” (from below). Staging mobilities is the dynamic process between being staged (being stopped at a traffic light) and the mobile staging of interacting individuals (negotiating a passage on the pavement).’¹¹ Lighting should be designed to support movements in the urban space, whether they be staged ‘from above’ according to regulations or ‘from below’ according to how people prefer to use spaces and interact in them.

According to Maria José Martínez Sánchez, it is essential to understand that the movement of cars, bikes, people, and other flows in the city is a parameter to consider when establishing a spatial configuration in urban design. In the paper ‘Dynamic Space, Complex Contexts’, Sánchez states that ‘the spatial configuration determines the dynamic qualities of the space, so by analysing movement analyses we could determine those relationships.’ Using movement analyses, we can find order in what may at first seem like chaos. Sánchez also refers to Jane Jacobs and her choreography of pedestrian ‘ballet dancers.’¹² The interplay between the setting and the play is in focus.

Dynamic lighting scenarios for the city should be designed according to the monitored movements of people in the urban space, as described by Jensen. In addition, they should be designed according to the overlapping rhythms of the city and of nature, as described by Henri Lefebvre in his book *Rhythmanalysis: Space, Time and Everyday Life*. According to Lefebvre, patterns of movement are created as the rhythms of ‘days, nights, seasons, waves and tides’ meet with those of ‘human structures’. Through reference to the theatre, Lefebvre describes the layers of rhythms and the interaction between people:

‘The everyday is simultaneously the site of, the theatre for, and what is at stake in a conflict between great indestructible rhythms and the processes imposed by the socio-economic organization of production, consumption, circulation and habitat.’¹³

The rhythm of a play or the rhythms of everyday actions are important factors to consider in establishing meaning, whether in the action of the play as perceived by the audience or in guiding the flow through the urban space of pedestrians. When working with light in the urban space, the existing rhythms of the place should be analysed, and visions for the staging from above of the future rhythm of that space should consider the supportive use of dynamic lighting.

In the article ‘Performance and the Spatial Turn’, Fiona Wilkie reviews and discusses four books about the relationship between space and performance. The books make a strong case for performance practice as an ideal lens through which to consider the politics of place. Wilkie suggests three main directions: detailed attention to the complexity of mobile citizenship, use of theories of memory, and an increased awareness of the politics of visible and invisible space. The work of Henri Lefebvre appears in all books, especially his thoughts about citizens’ ‘right to the city’ and his claim that ‘(social) space is a (social) product’. Wilkie argues that space is socially produced by people, and what she describes as ‘social performance’ plays an active role in the production of a space.¹⁴

Based on the literature study, on ‘the actor’, several concepts have been pointed out because of their reference to scenographic principles and the possibility of using these concepts to define the potentials of lighting in urban spaces. The concepts pointed out include the following: facework, scripts for social interaction, front stage/back stage (Goffman), visual perception (Gibson), mobilities (Jensen), rhythms (Lefebvre), movement analysis (Sánchez), and socially produced space (Wilkie).

Space

In the urban space, the setting is not easily changed; buildings facades, surfaces, and objects such as street signs are fixed and stationary, unlike those on a theatre stage. Though different light settings can change the identity of the nightscape, the frame remains static. The following texts explain how urbanists and architects use various concepts to analyse an urban space and

the people using that space, as well as how they refer to scenography to define the potentials in relation to designing liveable cities.

Kevin Lynch uses the concept of imageability in his book *The Image of the City*. Lynch states, ‘The definition of what might be called imageability [is] the quality in a physical object which gives it a high probability of evoking a strong image in any given observer.’¹⁵ This is similar to the theatre, where the intention is to create a link between what happens on stage, what the audience observes, and the memories and images that may be evoked in each observer. To handle visual form at the urban scale, Lynch formulated an architectural method, a structure to establish an overview of the city, constituting five types of city elements: paths, edges, districts, nodes, and landmarks. On the theatrical stage, we also see elements in a certain structure to establish an overview, supporting the play and actions on stage.

Jan Gehl introduced the concept of eye level. According to Gehl, an urban space can be designed in a logical way, by analysing people’s actions and observing them at eye level: What are they doing, and how do they prefer to do it? The architecture of the urban space affects people and their actions: ‘First we shape cities and then they shape us.’¹⁶ Gehl’s work focuses on the relationship between urban spaces and individuals.

Jane Jacobs provides a framework for assessing cities’ vitality. Her work is about the roles of the actor and the action within the context of the city. When describing safety on sidewalks, Jacobs explains the complex order of movement on the sidewalk and the constant meetings between people. ‘This order is all composed of movement and change . . . we may fancifully call it the art form of the city and liken it to the dance . . . an intricate ballet in which the individual dancers and ensembles all have distinctive parts which miraculously reinforce each other and compose an orderly whole.’¹⁷ Thus, Jacobs introduces the choreography of ‘the dancers’ (the pedestrians) as a lens through which to look at the actions on the sidewalk in a new way, with references to the theatre.

According to Jacobs, the pedestrians play distinctive parts that comprise an orderly whole. David Leatherbarrow also uses the metaphor when applying the phrase ‘the part and the whole’ to describe the connection between architecture and urbanism. The disciplines are often developed separately from each other, a gap which Leatherbarrow seeks to bridge with a reference to

Aldo van Eyck, 'Tree is a Leaf and Leaf is a Tree', meaning that a tree and a leaf have the same structure and are connected to and dependent on each other, as are, indeed, architecture and urbanism.¹⁸ Likewise, the quality of light depends on the surface it illuminates and can only be assessed in relation to the function or the social interaction it is meant to support.

Jekaterina Lavrinec describes the concept of urban scenography as the interconnections taking place in urban settings between spatial configurations and everyday scenarios. This suggests that spatial structures influence behaviour and emotional experience and, for example, can encourage citizens to be active.¹⁹ By contrast, Thea Brejzek explains how urban interventions can provoke a critical dialogue between the built environment and its inhabitants. By using the urban space as the scenography and provoking people with interventions, the space is transformed, and value is added.²⁰

An intervention can change the moment and provide an experience, but when an artistic light installation becomes a permanent part of a place in the city, for example, the atmosphere in that place is enduringly changed. Jean-Paul Thibaud discusses the backstage of urban ambiance and what atmospheres pervading everyday experience does to citizens. This urban transformation affects everyday urban situations and daily social activities in which urban development no longer only concerns built forms and spaces but also the designed sensory environment that people experience while moving through the urban space.²¹

Based on the study above, several concepts related to 'space' were selected because of their reference to scenographic principles and the possibility of using these concepts to define the architectural and social potentials of light in urban spaces. The concepts pointed out are imageability and city structure elements (Lynch), eye level (Gehl), choreography of people (Jacobs), the notion of the part and the whole (Leatherbarrow), urban scenography (Lavrinec), urban interventions (Brejzek), and urban ambiance (Thibaud).

Light

The following analysis discusses how architects, lighting designers, and researchers of performance analyse and describe the use of lighting in urban spaces and on stage, in order to examine light as a tool that can change a space's identity and thereby impact uses of the space and social interaction.

The lighting designer Roger Narboni distinguished between two ways of designing urban lighting. ‘Light urbanism’ represents urban lighting design made in lighting master plans, which include lighting for a city’s functions (e.g. roads and sidewalks), its historical buildings, and its meeting places. On the other hand, ‘nocturnal urbanism’ is about adapting the lighting to the urban space’s actual use at night as well as creating or supporting certain atmospheres and nocturnal identities. Narboni states that all cities look the same at night because of the same regulations for light and the use of the same fixtures and light sources. He asks, ‘How [does one] imagine a night identity for cities [that is] different and special, according to their history, their culture, their geographical location, their climate, and the diversity of their inhabitants? . . . The nocturnal identity is for me related to people present in the space at night, to the diverse nocturnal uses, during different periods of the night and of the year. And all these components are related to night time only.’²² Narboni then calls for a connection among the light, the use of the space at night-time, and the space’s users.²³

Ulrike Brandi outlines how a typology of city spaces can be created by monitoring ‘hotspots of perception’, consisting of selected sceneries where everyday lighting seems to affect city dwellers: ‘Which story does the light tell about the city, how is the light perceived and how are the different light scenes linked to a function in the city?’²⁴ The hotspots in the city are explained in sketches, seen from a car as the view of a pedestrian moving through the city. Another series of sketches describes the city through the eyes of a lighting designer when arriving by plane, driving a car, and reaching his or her hotel by foot. The sketches show how lighting forms the city by night.²⁵ In Brandi’s sketches, a link to the play on stage is discernible, as she explains the scope for action in different settings and the perceived impacts of changes in lighting.

Kauro Mende has been designing with a focus on shadow, rather than light, throughout his career as a lighting designer: ‘Though the world we see is made up of layers of light and shadow, it is shadow not light that is usually in [the] focus of our gaze. Rather than the angle of the sun, we focus on the shadow of objects cast by the sun.’²⁶ At the theatre, shadow is a strong tool used to design the setting, to reveal details about the actors, and to make impressions that connect to the play. Mende pinpoints the importance of the balance between light and shadow as well as between static and dynamic light. Thus, at the theatre, the balance between static and dynamic light is used to create progress in the story and enhance the play.

The development of lighting technology and the increased ability to shift between static and dynamic light has enormously impacted scenographic practices. Laura Gröndahl, a scenographer and professor in stage design, discusses the influence of stage lighting on the processes of scenic design and the functioning of the performance space: 'Light can no longer be thought of as a necessity that can just be added to the performance. It has become one of its basic visual elements, directing and focusing the spectator's gaze. The rhythm of changing lighting cues creates a visual dramaturgy, which has turned visual design from solid constructions to a score of temporal events.'²⁷ The technical advances have given light a prominent role in theatre practice, whereas light used to be added at the end when setting up a play. Referring to controlling light, Gröndahl continues: 'Because of the dramaturgical function of lighting cues, the whole scenography had to be thought of in temporal terms and not as a purely spatio-visual, solid environment. It was not enough anymore to design the architectural structures and visual atmospheres; you had to think of it as a dynamic event.'²⁸ This dynamic event is linked to the programmed light. In this article, the intent is to show that programmed light in urban spaces can tie the space, the people, and their actions together in new ways and thereby support specific uses of the urban space.

When Gröndahl links the stage to urban spaces, she argues that 'today's inter-medial scenography can be seen as a parallel to the contemporary experience of our spatio-visual environment in everyday life, echoing the changes that happen in our ways of perceiving and conceptualizing the world.'²⁹

In practice, choices about the location of the light, the angle, and the chosen type of light source have great significance in relation to what one is intending to visualize on the scene. The lighting designer Max Keller explains how lighting designers adapt the light to action and the atmosphere. Light can be adapted to the scene's details, the actor's expression, or what the actor must do. The lighting designer decides when to illuminate with a spotlight rather than a diffuse light, how to work with contrasts and shadows, and how the dynamic transitions (light cues) are programmed between moods or scene changes.³⁰ In his book *The Light Code*, Norbert Werner Wasserfurth-Grzybowski describes light in the urban space as a system of signs that can be understood in codes: 'The city is a semiotic system of signs that can be decoded or encoded. The resulting light code plays a key role in the way a town or a city is perceived in social, cultural and economic terms.'³¹ Wasserfurth-Grzybowski defines the city's urban light code as its DNA: 'The urban

realm is dynamic—it is alive and in a constant process of change. Behind all this is a code that connects everything together, and this needs to be elucidated as a common effort since we can only plan and design what we are aware of.³² Thus, the ‘light code’ supports or creates collective visions for the city.

Erika Fischer-Lichte explores the range of complex meanings that light can add to a play and encodes the importance of light in using semiotics as a tool. Lighting is a spatial sign, says Fischer-Lichte, with reference to the theatrical code as a system. Light has both a practical and a symbolic function. The practical function of light as a spatial sign rests on the basis of four factors: intensity, colour, distribution, and movement. If one of these factors is changed, then the meaning implicit in the light design can also change. In the urban space, the practical function is related to the choice of fixture, the light source, and the lamp’s positioning, for example.

Light symbolically functions as a system which generates meaning; light can isolate an object, induce significance into a place, be related to a character’s personality, be related to an atmosphere, and represent a mood or even an idea.³³ In the urban space, the symbolic functions of light are related to, for example, the atmosphere one intends to create with light or to objects or places one would highlight.

In the article ‘Light Design and Atmosphere’, Tim Edensor touches upon how light and darkness can act as powerful agents in producing an atmosphere. He refers to Böhme and elaborates upon the reference to the stage set when describing atmospheres. ‘Atmospheres are an intermediate phenomenon and, while certain ingredients that shape atmosphere—of lighting, for instance—may pre-exist [before] people’s entrance into the setting, their response to it is also likely to be shaped by their current mood and prior experience, and this in turn has the potential to feed back into the ongoing production of the atmosphere.’³⁴

Based on the literature review above related to ‘light’, several concepts have been pointed out because of their reference to scenographic principles and the possibility of using these concepts to define the potentials of light in urban spaces. The concepts pointed out are nocturnal identity (Narboni), light scenes (Brandi), shadow (Mende), dynamic events (Gröndahl), the urban light code (Wasserfurth-Grzybowski), the atmosphere (Edensor), practical light (Keller), and symbolic light (Fischer-Lichte).

In each chapter—on actor, space, and light—key concepts were selected describing how scenographic principles may be used in urban design, architecture, and lighting design or how scenographic principles are used within different research disciplines to structure analyses of complex urban space contexts. In the following, these concepts will be combined to define architectural and social potentials of lighting in urban spaces.

RESULTS

The concepts from the literature analysis are collected in Figure 2 below and are later described in a series of recommendations for how light's architectural and social potential can be used in urban spaces.

Potentials

The concept described in Figure 2 is explained below in a series of recommendations for the architectural and social potential of light:

Architectural potentials of light in urban spaces:

- Lighting design in the urban nightscape may—at the city-planning level—be useful for establishing a nocturnal city structure.
- At eye level—when the lighting is designed in light scenes—the practical and symbolic qualities of light and shadow may be utilized to create spaces with different social and aesthetic atmospheres which relate to people's memories.
- The visually perceived space and the materials and surfaces in that space may be tuned with light to meet or support certain nocturnal purposes.

In the interconnections between the built environment and everyday practices, lighting can influence behaviour and emotional experience when designed to create a certain urban ambience.

Social potentials of light in urban spaces:

- Urban spaces are often designed primarily for daylight situations, and the lighting is added later and planned according to the daylight use. However, a city's lighting may be designed for the nocturnal identity of the space, with varying designs according to the area's use. It can be designed to meet the needs for commuting and communicating in a socially conducive and safe atmosphere.

- The social rhythms and the more or less self-conscious scripts for social interactions in public spaces may be analysed and lighting be designed according to these rhythms so as to create attractive spaces for everyday activities.
- Light may be designed to support face-to-face communication between people by using scenographic principles when designing the light, and also to facilitate mutual acknowledgement and trust as well as a sense of common purpose in public spaces.
- Light may be designed according to movement and rhythm analyses conducted in the city, and the light can therefore support wayfinding, point out the direction for walking, and also show people where to walk (choreography) by demarcating areas for specified functions.
- The dynamics of lighting (e.g. turning lights on/off, dimming or increasing light levels) made possible by technological development may be connected to the natural rhythms of day and night and of summer and winter, and to the city's social rhythms. The dynamics of lighting design may add another layer to the experience of the urban nightscape and thereby support increased use of the city.

Space	Light	Actor
<u>Space</u> <i>city structure</i> (Lynch) <i>part and whole</i> (Leatherbarrow) <i>imageability</i> (Lynch) <i>eye level</i> (Gehl)	<u>Space and light</u> <i>nocturnal identity</i> (Narboni) <i>light scenes</i> (Brandi)	<u>Perception</u> <i>visual perception</i> (Gibson)
<u>Space and scenography</u> <i>choreography of people</i> (Jacobs) <i>urban scenography</i> (Lavrinec) <i>urban interventions</i> (Brejzek) <i>urban ambiance</i> (Thibaud)	<u>Light qualities</u> <i>shadow</i> (Mende) <i>practical light</i> (Keller) <i>symbolic light</i> (Fischer-Lichte) <i>atmosphere and light</i> (Edensor)	<u>Social interaction</u> <i>face work</i> (Goffman) <i>scripts for social interaction</i> (Goffman) <i>front stage / back stage</i> (Goffman) <i>socially produced space</i> (Wilkie)
	<u>Light and movement</u> <i>dynamic event</i> (Gröndahl) <i>urban light code</i> (Wasserfurth-Grzybowski)	<u>Human movement</u> <i>mobilities</i> (Jensen) <i>rhythms</i> (Lefebvre) <i>movement analysis</i> (Sánchez)

Figure 2. Matrix of concepts from literature analysis.

- Light may visually connect elements in an urban space. Lighting up a small symbolic object in the city may have a great impact on the experience of that special location and thereby the entire space's perceived identity. The light code of a space includes all of the illuminated elements and their coherence.

CONCLUSION

At the theatre, all planning centres on the play's purpose or message—on what the story is about and how the scenography can support that story and that message. All efforts are focused on this goal.

In the urban space, 'the scene' is fragmented and diffuse, functions or 'plays' are often designed separately, and so is the lighting design. This complexity is defined through two potentials for the lighting: the architectural and the social potentials of light. These potentials form a theoretical framework with which it is possible to discuss the historical, physical city—specifically, the vertical surfaces and their potentials for creating architectural scenes with light. At the same time, the dynamics of light can be combined with the dynamics of the flow of traffic, people, and the natural rhythms of light and weather in the architectural scenes. The social potential of light can be enhanced by designing light to support meetings between people, whether a nod or a conversation in the everyday actions within the city. The aim of this article is to show that by using the mindset of the theatre stage in the city's nocturnal spaces, we can tell the 'story' of the specific space in specific settings and thereby create nocturnal urban spaces where lighting enhances either planned-from-above or pre-established-from-below place identities and social uses of the space.

PERSPECTIVATION

The theoretical framework developed in this article is the initial analysis for a three-year project investigating how urban lighting can meet more potentials. The reference to scenography, the scenographic principles, and the potentials defined in the article will be used as qualitative tools to analyse existing urban spaces and to develop design concepts for better use of lighting. This initial theoretical analysis was conducted to create a conceptual framework supporting the important work on emphasizing focus lighting in urban spaces. This framework is meant to support the awareness of how lighting affects our perceptions of urban space identity, and thereby how light affects how people move in the space and how one relates to other people in the space in certain light settings.

NOTES

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