THAT MEANINGFUL LIGHT

A PHENOMENOLOGICAL APPROACH TO MEANING IN LIGHTING DESIGN

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To Isabel, for guiding me.

To Mamica and Taticu, my only roots.
To Tinu, my constant inspiration.
To Ari, who brought me back to light.
To Roxi, for being by my side.
To family and friends everywhere.

Thank you for making my life meaningful.
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ABSTRACT

As lighting design matures into a stand-alone profession recognized globally, lighting designers find themselves compelled to reach beyond the functional aspects of lighting and join other design fields in a conscious intent to shape spaces which audiences assimilate as meaningful. Responding to this challenge, the present study correlates the psychological processes that lead to the cognitive attribution of meaning with the perceptual aspects of light, aiming to outline a phenomenology of lighting, as means of enhancing the human experience within illuminated environments. Following an investigation of the available literature on the phenomenology of both meaning and perception, the thesis proposes a comprehensive structure of meaning accessible through lighting design, organized into three interrelated layers. Thus light gains meaning as survival factor catering to basic needs, as choreographer for sensual experiences triggering affects and as storyteller portraying our existential values. The study expands on how these three layers of meaning can be reached by designers who shape spaces with light, offering a perspective on the ability of lighting to impact human consciousness, which is the ultimate commander of meaning.
INTRODUCTION

Light. The fascinating immaterial that catches the eye and vibrates the soul. The companion that organizes our lives into days and nights, seasons and moods. Light made a promise of blossom, and artificial light joined natural light on a mission to fulfil this inherent commitment.

Yet, in a field with countless techniques and luminaires, under the pressure of constant technological innovation and increasing sustainability demands, the creation of relatable lighting concepts proves delicate for designers. One principle, however, remains decisive: we light for people. Learning how humans develop ties with their surroundings and why they embrace certain environmental elements as significant will help lighting designers generate better spaces for an improved quality of life.

On this foundation, the following study outlines a structure of meaning in lighting design and highlights the essential elements necessary to develop meaningful spaces through light. These elements represent the base for stronger lighting concepts, where every lighting gesture finds legitimate justification in the unequivocal meaning identified by beholders in the illuminated space.

THE QUESTION

In 1926, Le Corbusier presented his Five points towards a new architecture, among which the ‘horizontal window’ was praised as the opportunity to give light a central role in our habitats, justifying that ‘we all love air, day and openness’1. His modernist vision empowered artificial light, which became an authentic construction material for the architecture of the night, conveying illumination with extrinsic meanings as power and status. Foreseeable, modernist architecture along with the first lighting design attempts failed2 due to a constant focus on finding meaning in shape, while post-modernism rose with a new approach, genuinely bringing the human being into the centre of the design universe. A series of philosophers, psychologists and architects dedicated their time to studying how humans react to their built environments, in a quest to improve the standards of life in a sustainable way. Thus emerged the intent to build for the people and to shape engaging spaces that nurture human interaction, as the appropriate grounds for meaningful habitats.

Phenomenological research in architecture revealed lighting as a key element in creating meaningful spaces, yet studies focused exclusively on evaluating lighting from a phenomenological perspective remain scarce, compelling lighting designers to rely predominantly on intuition when they design the experience of an illuminated space. It is therefore urgent and wise to turn our eyes to the core of human centric lighting design and ask ourselves much like Bachelard3 in “The poetics of Space”:

Out of the many spaces of light that triggered positive human response, can we isolate an intimate, concrete essence that justifies the meaning identified by people in their illuminated surroundings?

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3 BACHELARD, G. (1994). The poetics of space. Boston: Beacon Press. pp 3. Original question upon which Bachelard founds his phenomenological approach: ‘Transcending our memories of all the houses in which we have found shelter, above and beyond all the houses we have dreamed we lived in, can we isolate an intimate, concrete essence that would be a justification of the uncommon value of all our images of protected intimacy?’
METHODOLOGY

This thesis is framed as an account of the essential aspects of meaning at the crossroads of human existence and lighting universe, with focus on the inner mechanisms that stimulate people to appreciate a particular illuminated space as meaningful.

The methods of investigation incorporate secondary and primary literature review from the fields of perception, lighting theory, architecture theory, phenomenology and cognitive psychology. The collected data is interpreted and organized into a ‘structure of meaning’, illustrating a comprehensible phenomenology of light, as base for human centred lighting design. Supported by the analysis of two case studies found meaningful by the author of this thesis, the study ends with a discussion on the potential use of this investigation and with recommendations for further related research.

Key Words: Meaning, Light, Light Experience, Phenomenology of Meaning, Value, Emotion, Needs.

Figure 1. Artificial light joins natural light on a mission to convey meaning in our lives
DECODING MEANING IN LIGHTING DESIGN

THE STUDY OF MEANING

Rapoport lists three viable ways of studying environmental meaning, reminding the traditional model, based on the study of symbols, the semiotic model based on linguistics, and the phenomenological model, based on the analysis of human experience in relation to the environment.

In lighting design context, the account of lighting symbols as bearers of meaning narrows the study to extrinsic implications and the semiotic model can offer only partial background for study. Using Jenks' analysis on the language of architecture as an example, the seven components of visible light can be assimilated to words and – following linguistic mechanisms – can be assembled to transmit a significant message. Using the semiotic approach, meaning is best described as connotation, or ‘significant quality; implication of a hidden or special significance’ of the illuminated environment and can be delivered as an encoded message following a precise route, as identified by Rapoport:

![Diagram](image)

**Figure 2.** The route of meaning in environmental communication, as described by Rapoport (Illustration by Dascalita. R., 2018)

Following this unidirectional path, meaning is successfully conveyed only as long as both creator and beholder of space use the same reference system. Yet ‘designers tend to react to environments in perceptual terms (…), whereas the users react to environments in associational terms’, leading to potential loss or misunderstanding of meaning on the route. It is therefore the designers’ duty to bridge this gap between them and their audience and to explore how meaning is decoded, by learning how humans use, sense and value their environment, as key points in creating meaningful design.

The following study explores the meaning of light primarily based on this phenomenological model. Consequently, while taking into account that humans perceive the environment as a whole and don’t consciously separate light from the object it is applied on, the analysis deliberately shifts focus from architecture, landscape and urban space to lighting, here assessed as an equal generator of meaning.

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9 Ibid. pp 15
LAYERS OF MEANING

The phenomenological study on cognitive semiotics conducted by Brandt in 2010 specifies the steps taken by the human brain to assimilate meaning and offers a coherent base upon which this study unfolds. Correlating these steps with subsequent research on environmental phenomenology, this thesis proposes a structure of three layers of meaning relevant to the lighting design field. Thus, meaning can be accessed through lighting design at three stages of complexity, following a layered structure:

I. through **basic human needs** as the base of survival
II. through **affects** sparked by sensual experiences
III. through **existential values** acquired through coordinates of existence

Each of these layers of meaning builds upon the previous ones, rounding up into a phenomenological understanding of the relationship between human beings and their illuminated environments.

The ability of **artificial lighting** to impact humans and convey meaning is rooted in our experience with natural light. However, due to its artificial quality, electric light is not naturally endowed with the powerful essence of natural light and needs to be further manipulated to convey meaning and spark human affection, as further explored through an in-depth analysis of each layer.

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I. MEANING ACCESSED THROUGH BASIC HUMAN NEEDS

Self-preservation is a powerful instinct deeply rooted within the DNA of any living organism. While plants grow towards light, animals and humans use sight to gather clues of where food and shelter can be found and to make decisions for subsequent behaviour. Central and peripheral vision simultaneously monitor the surroundings for stimuli ‘of relevance to biological needs’\textsuperscript{11}. The former registers colours and details within the visual field, while the latter, sensitive to subtle light changes and movement, scans the remainder of the environment for additional elements with potential biological significance\textsuperscript{12}. Light, as mediator for visual perception both by day and by night, enables humans to recognize the attributes of the surrounding objects and to collect environmental information which ensure survival.

LIGHT AS MEANS OF SURVIVAL

I.1 LIGHT FOR SIGHT

Attributive meaning
In terms of meaning, however, sight alone is not sufficient to decide whether an apple is edible or a tree offers shade. The brain interprets what the eye sees and attributes meaning according to past experience, by matching patterns and classifying stimuli. Once their meaning is decoded and learned, stimuli trigger automatic behaviour, as when we mechanically press the switch to turn on the lights.

Associative meaning
Yet objects are not recorded individually but as part of visual assemblies. In a quest to save energy and avoid overcharging itself, the brain will ‘simplify the incoming data and classify it according to the highest level of order found in the experience filter’\textsuperscript{13}. It is this unconscious mechanism that leads us to see a colonnade before the individual columns or a chandelier instead of 12 bulbs, in short, to ‘find the general among the particulars’\textsuperscript{14} and to perceive space as a whole, rather than in parts.

Focal meaning
In the context of associative meaning, the brain does not perceive the entire visual field as meaningful. Instead, it scans the surroundings, weighs through the meanings assigned to each item framing the space and focuses on the stimuli which respond best to its immediate needs. It is the relevance and interpretation of a stimulus which make it meaningful, relative to all other stimuli in the same space. With a leading role in focus selection, light can either fulfil expectations by accurately rendering all objects in the visual field or it can challenge the brain, by creating ambiguous images. It is important to note that in visual sets, ‘attention is turned to the ambiguous objects which cannot be assigned with familiar meaning’\textsuperscript{15}. Novelty and vagueness spark curiosity and the brain will focus on decoding the unfamiliar, in the same way it will dwell on deciphering the shadows behind translucent doors.

\textsuperscript{12} Ibid
\textsuperscript{13} Ibid. pp 32-39
\textsuperscript{14} Ibid.
\textsuperscript{15} Ibid.
I.2 LIGHT FOR ORIENTATION

Physical orientation
Highly efficient in helping humans find their way towards vital resources, light has been recognized as a reliable guide through space and as an essential tool in orientation. On the one hand, light enables the eye to record visual information which is sent to the brain and analysed as base for further movement. On the other hand, the brain is conditioned by phototropism\textsuperscript{16}, a survival mechanism that encourages humans to drift towards brighter areas which offer more visual information. On this note, light can be used as a means of directing people on the desired path.

Mental orientation
Orientation has an under-layer linked with our survival instinct which demands constant awareness of our surroundings. In unfamiliar environments the opportunity to mentally untangle space before physically navigating it is stunningly reassuring. In this regard, the single major decoding key for the brain is the \textit{function of the space}. People arriving to foreign locations tend to gather environmental clues and make assumptions on the function of the space to comprehend it and set the correct expectations in relation to it\textsuperscript{17}. Among these environmental clues, light has the leading role of explaining the location to the brain and in doing so, it must reveal the function of the space before pleasing the eye. A mismatch between function and lighting may generate disappointment, confusion and disorientation which, unless intended and fully controlled through the design, are avoidable stress factors.

From primary meaning to layers of meaning
Eco describes function as the practical solution to specific anthropological demands\textsuperscript{18}, which bears \textit{primary meaning} accepted and understood in society, allowing us to collectively recognize the hospital as dedicated to solving health issues and the university to spreading knowledge. However, this primary meaning can be boosted by attending multiple needs at the same time. In matching the lighting design with the architectural program, designers can follow an alternative technique proposed by Kahn\textsuperscript{19}, by disregarding their preconceived knowledge, meditating on the essence of space and re-imagining conventional functions as complex structures that awake latent, often ignored needs. This is how they may discover that a lobby is not a simple hallway, but an \textit{entrance}, a \textit{threshold} between two realms, a \textit{bumper space} that has one chance only to make a first impression, a \textit{host} that greets people and a \textit{junction} that guides them. Layers of functions follow layers of needs and the more layers of needs light attends, the more significant space becomes for the users.

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I.3 LIGHT FOR SAFETY

Physical safety
The ability to scout the surroundings for food and shelter and to ramble confidently through random whereabouts is intimately linked with a feeling of personal security. Our innate tendency to trust the eyes as the most reliable receptors of stimuli misled us to reduce complex experiences to vision and familiarity to light. While light does reveal the surroundings, brighter light is not automatically assuring. In fact, it has been proved that in areas perceived as dangerous the brain will register any shadow as a threat, therefore lower levels of uniform light are preferred to the sharper shadows caused by bright light.  

Psychological safety
Mental security is related to the legibility of the space and to the amount of intellectual effort involved in identifying familiar components in unfamiliar surroundings. Once the recognizable features of a space are identified, compared to past experiences and assigned primary meaning, one is able to proceed in exploration without fear, with body and mind ready to grasp other environmental aspects that might imprint new layers of meaning.

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Understanding the mechanism used by the brain to decode stimuli and assign surrounding objects with layers of primary meanings is fundamental in predicting how humans use space and react to certain design gestures. When the designer uses lighting tools to help his audience read the space, make behavioural decisions and feel safe, light fulfils its primary meaning of insuring survival.

Figure 4. Primary meaning of lighting is to ensure survival by fulfilling basic human needs.
II. MEANING ACCESSED THROUGH AFFECTS

Man dwells in the world as an inseparable whole - spirit and body, core and carcass - and his being unfolds at two entwined levels as ‘spiritual existence and lived experience’\(^ {21}\). We constantly exchange data with the environment that contains us and this dynamic defines us as both creators and products of space. Spiritual life outside the carcass is impossible as ‘our real knowledge about the concrete world is based on perception’\(^ {22}\) through body senses. Reciprocally, ‘there is no sensation without appreciation with its implicit judgment’\(^ {23}\), thus no meaning is created at pure sensorial level, but always as a result of cognitive filtering. The brain is permanently aware of the exterior stimuli registered through the senses and filters these stimuli in an untired search for significant content to assimilate as meaningful.

LIGHT AS GENERATOR OF AFFECTS

Lighting design is called ‘to serve mankind by bettering the sensual perception of life’\(^ {24}\) and to reassess the man-made environments from their estranged statuses of built spaces to the superior dimension of enjoyed spaces. This implies that lighting must surpass its visual condition and become a multi-sensorial stimulus, able to employ additional perceptual senses during the spatial experience. Lighting can address hearing, touch, taste and smell by using principles and structures characteristic to these more intimate senses, resulting in a stimulated consciousness and a higher awareness of the surroundings.

When awareness to the surroundings is summoned, the spatial experience transcends form sensorial level to sensual level, by generating affects, which are both moods and emotional responses awaken by the stimulated senses, the same way pleasure is awaken by a caress.\(^ {25}\) Thus, lighting can re-sensualize the senses by reaching beyond perception, to awaken the affects and to catalyse a wide palette of moods and emotions that strengthen the connections between the surroundings and the self.


Figure 5. Relationship between affects, moods and emotions
(Illustration: www.pearson.com)

Affect
Defined as a broad range of feelings that people experience. Affect can be experienced in the form of emotions or moods.

Emotions
- Caused by specific event
- Very brief in duration (seconds or minutes)
- Specific and numerous in nature (many specific emotions such as anger, fear, sadness, happiness, disgust, surprise)
- Usually accompanied by distinct facial expressions
- Action-oriented in nature

Moods
- Cause is often general and unclear
- Last longer than emotions (hours or days)
- More general (two main dimensions—positive affect and negative affect—that are comprised of multiple specific emotions)
- Generally not indicated by distinct expressions
- Cognitive in nature

Figure 6. The wheel of moods shown in opposition of the high and low ends of the affective spectrum
Lighting design ideally induces moods at the right side of the wheel
(Illustration: www.pearson.com)
Figure 7. The wheel of emotions according to Plutchik
The core circle shows the 8 primary emotions, as base for all other emotions, grouped into polar opposites
(Illustration: www.ee.columbia.edu)
II.1 LIGHT FOR RE-SENSUALIZED VISION

Pallasmaa notes that in contemporary Western world, vision is the dominant sense to the point where it aggressively moulds our culture as an ‘ocularcentric paradigm, a vision-generated, vision-centred interpretation of knowledge, truth and reality’. While ‘the world becomes a hedonistic but meaningless visual journey’ we face the risk to ‘alienate vision from the emotional involvement and identification’. Light, as mediator between the world and the body through the eyes, has the ability to re-sensualize vision and reconnect it with a more intimate consciousness of the perceived environment. Aiming to awake the affects, light excites the eye through its four characteristics: brightness, colour, texture and direction.

**Brightness** is a relative value, only perceived in comparison to the surroundings, in a range of up to 20 different intensities simultaneously. The eye adapts to various levels of brightness, yet brighter sources determine the contraction of the iris, which results in lower amounts of light falling on the retina.

A re-sensualisation of vision implies using these perceptive properties of the eyes, while embracing darkness. Lower light levels allow for a meditative state and a sense of intimacy, and give us the opportunity to take back our overexposed lives. Touches of dim light, soft plays of shadows, intended contrasts and gradients lead the gaze from the physical world into infinity, opening the door for imagination, daydreaming, thought travel and a clearer vision of the mind.

**Colour** is a relative property of light, varying with the background which may range anywhere from darkness to unfiltered daylight. We become aware of light colours mainly by comparison, as when we place a candle against the waning blue sky during twilight, to balance its blueish tones reflected on our faces. As humans, we are adapted to detect red - the colour of our skin and by extension, of potential mating partners. It is our aspiration for survival and wellbeing that determines us to seek warmer colours of light, which stimulate our limbic system, complement our features, skin tones and surroundings, invite us to interact and make us look happier and healthier. To re-sensualise vision through colour, light is compelled to disconnect us from the daily rush and to catch our eyes towards the beauty of the people around.

**Texture** influences vision through either the sharp or the diffused appearance of light. A precisely highlighted detail will focus attention, while a cloudy atmosphere will pave the way towards an introspective journey. Attending the re-sensualized vision, the fusion of various textures of light sets the boundaries between definite and indefinite, between reality and dreams, sparking a tension among material and imaginary that deepens the lived experience of the surrounding space.

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27 Ibid. pp 25.
Directionality of light is widely familiar due to our experience with natural light, where ‘light zones perceived as horizontal recall the horizon and bear profane meaning comprising of everyday life rituals, while light zones perceived as vertical bind us to the sky, holding sacred meaning’\(^{33}\). Additionally, we perceive the direction of light in relation to our eye level and associate the light areas above this level with a formal atmosphere which induces a feeling of restraint, whereas the light areas under the eye level are associated with an informal, cosy atmosphere that induces a feeling of individual importance\(^{34}\). Directionality can re-sensualise vision by reminding us of our place in this world, while establishing light as a pivotal connection between the self and a higher, protective entity.

\[\text{Figure 8. Light re-sensualizes vision by employing its four visual characteristics to foster an affective connection between the human soul and the outer world}\]

\[\text{***}\]

Contemporary architecture is intentionally designed to be seen, therefore it is vastly monopolized by vision, yet when we want to live space we often close our eyes, as Pallasmaa\(^{35}\) observed, to allow the less distant senses as hearing, touch, taste and smell fully experience spatial beauty. A more surprising experience is to grasp not only space, but merely light through other senses than vision, and the freshness of this experience is fundamental to rejuvenate the senses and subsequently, to awake the affects.


II.2 LIGHT FOR RE-SENSUALIZED HEARING

Music is the art that elevates us all. We are sensitive to tempo, harmony or timbre of instruments and are able to follow the distinct sounds and the overall melody at the same time. Zumthor suggests looking into both classical and contemporary music for spatial inspiration, as a guide to creating a ‘meaningful whole out of many parts’\(^{36}\). He embraces order and rhythm, but also values disharmony and dissonance as means of stating a message. Light can organize the visual field to such a level that it renders space as music, with rhythmicity, high and low tones, dynamics and structure. At the opposite end, Zumthor calls for silence in architecture. He highlights the timeless quality of buildings that remain humble and do not aspire to shout messages at their beholders at every step, but only envelop life and allow people to internalize space. In extension, light compositions that reach the balance between the ‘polyphony’ of light layers and the ‘volume’ of light tones manage to avoid both dullness and visual noise, and gently caress the eyes. Light music slowly dims vision, but sharpens hearing for the deep sounds from within our thoughts and souls.

II.3 LIGHT FOR RE-SENSUALIZED TOUCH

Fingertips, as eyes of our skin, mediate the intimacy between humans and space, revealing a materiality the eyes could never grasp alone: soft-rough, light-heavy, warm-cold, dry-moist, dense-loose, fluid-solid, flat-round, near-far. Tactility helps us differentiate through the infinity of textures, enriches our sense of tectonics, distance and atmosphere, and expands our palette of sensations. Our skin develops a direct, intimate connection to light, by experiencing the ‘cool and invigorating shadow under a tree, or the caressing sphere of warmth in a spot of sun’\(^{37}\). Additionally, the nerve endings in our skin are so receptive that the lightest touch sends a signal to the brain and triggers an emotional response. The brain then associates the feel of a material with its appearance, allowing us to recall that precise sensation at the mere sight of a similar fabric. Sensual lighting addresses the skin and juggles with the diversity of fabrics, shapes, depths and temperatures of space in such a way that it urges one to raise the hand and touch the surroundings, only to materialize this tactile revelation.

II.4 LIGHT FOR RE-SENSUALIZED TASTE

Light falling on objects around does not simply reveal their silhouette, but communicates additional intrinsic qualities, which we have learned through other senses than vision. Deliciously coloured fruits recall rich flavours which fill the palate even before tasting them, while fine rendered surfaces generate a sense of taste that sparks our curiosity for their aroma. Humans developed a genuine joy of understanding the world and the different cultures through taste. A delicious light enjoys the ability of picking on the most appetising qualities of the visible world, inviting us to share the sweet and savoury details around and warning us of the bitter or spicy items in sight.

II.5 LIGHT FOR RE-SENSUALIZED SMELL

Smell is the sense that records the strongest memories of space\(^{38}\) and is endowed with an incredible power to revive specific stories the eyes may have forgotten. The warm odour of burning wood, the fresh scent of a forest, the crisp smell of seaside fishing villages or the floral perfume of the living room dig into our memory for other moments in time and space when they impacted us.

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Yet, the deeply introvert character of smell places it the furthest from the extrovert sense of vision. It is challenging, but nevertheless possible the use of burning candles, foliage projections, or colour palettes inspired by a seaside morning.

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Light is a versatile stimulus, with latent potential of generating immersive experiences and igniting emotions through all senses. The implicit benefit of using light as catalyst to re-sensualize the senses resides in the infrequency of holistic, multi-sensorial experiences, which trigger chain reactions: unexpected sensorial encounters awake the senses which, arousal, engage in further exploration of space, sparking an affective response. The sudden change in the emotional state urges the brain to become aware of the surroundings and raises its permeability to potential meanings encoded in the illuminated space.

Figure 9. Light re-sensualizes hearing, touch, taste and smell by invoking our memory of the world perceived through these marginalized senses.
III. MEANING ACCESSED THROUGH EXISTENTIAL VALUES

Lighting that is permanently assimilated as meaningful shifts focus from senses to values, fostering wider debates on past, future, ideas and ideals\textsuperscript{39}, encouraging feelings and alternative visions of our existence so strong that they remain engraved in our memory, beyond the ephemeral moment of sensual exaltation.

Light that celebrates our values tells, in fact, a story about one, or more, of our main coordinates of existence: space, time, context and community. These archetypal coordinates of existence are interpreted and internalized by every individual as fundamental concepts that shape our understanding of the world, our moral standards, ideological beliefs, passions and aspirations as quintessence of life.

Alain de Botton’s reflections on meaningful architecture find correspondent in lighting design. The meaningful light understands who people are and what satisfies us\textsuperscript{40}. When light greets our positive nature and reflects our high values, it in fact renders a better version of our life and supports us in developing meaningful connections with and through our illuminated surroundings.

LIGHT AS EXPRESSION OF THE COORDINATES OF EXISTENCE

III.1 LIGHT EXPRESSING SPACE

Space is the cradle of our existence, providing the necessary physical canvas for our lives to unfold. Norberg-Schultz noted that space transcends both its geometrical and sensorial dimensions to a higher conceptual sphere which he names ‘existential space’ and quotes Piaget to define it as ‘the product of an interaction between the organism and the environment’\textsuperscript{41}. Space, as an inseparable component of our being in the world, is simultaneously object and experience, and consists of elements that precede our individual lives, elements absorbed by humans due to their archetypal significance. We mediate space through such notions as up, down, vertical, horizontal, before, behind, but we live space through rather complex concepts which bear meaning in relation to the spatial dimension of our existence.

Centre and Place

The concept of centre in the organization of space represents the point of reference where all directions converge and is justified by a deep human need for a pillar of existence, a ‘vertical axis mundi’\textsuperscript{42} that structures our journey in life. Centre is an ideal, and life is the journey towards this ideal, echoed in the concrete world with the concept of ‘home’, which encompasses all that is known to the human being as opposed to what is unknown and potentially frightening. Places develop radially around the centre as familiar zones of comfort and allow public intrusion without endangering the feeling of security. Places foster self-expression and the development of significant relations with other beings because they are always governed by the central pivot, the same way a candle in the middle of a table becomes the unique point of reference that unites lovers into a ‘common centre of meaning’\textsuperscript{43}.

\textsuperscript{40} Ibid, pp 213
\textsuperscript{42} Ibid. pp 18
Direction and Path

Direction and path represent the dynamics of human life, characterized by the aspiration for a sacred dimension in vertical plane and the constant discovery of the profane in horizontal plane. ‘Above’ and ‘below’ designate the desire to breach to distinct levels of existence, while ‘forward’ and ‘behind’ describe the extent to which we conquer our concrete world. In the exploration of his existential space, man engages on a direction, yet unexpected elements affect his intended trajectory, transforming the journey into a complex experience and the direction into path. The primordial concept of path is characterized by the tension between known and unknown, it appeals to our need to learn and grow, and it adjusts along with the self, enriching our physical and spiritual experience of dwelling in the world.

Edges and Domains

Domains are unexplored areas which fill our mental maps for a holistic understanding of our surroundings, satisfying our need to ‘imagine the world as an ordered cosmos within an unordered chaos’\(^4^4\). By extension, the unknown realm is imagined as potentially similar to the known places, which makes it less threatening than the perspective of nothingness. Edges are created at the fine border between known and unknown, as necessary thresholds between ‘inside’ and ‘outside’, protecting the realm to which we belong from the alien world beyond. Edges awake our imagination and lure us into further exploration, as the horizon lures us to discover where the sun comes from, encouraging us to be brave and expand our familiar universe.

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Meaningful lighting design joins architecture, assuming a mission to organize space. *Hierarchy, rhythm, directionality, trajectory, tension between order and chaos* shape not only a perceptual but also an existential space, which translates into a spiritual balance we all long for. And as de Botton concludes, *balanced space talks about a certain kind of maturity which offers us the vision of a healthy state of mind which we all call happiness.*\(^4^5\)

\(^{44}\) Ibid. pp 23  
III.2 LIGHT EXPRESSING TIME

Despite its abstract infinity, time is the one limited resource each of us is endowed with at birth. The consciousness of our ephemerality is the engine that turns our ideals into actions and the reason we’ve tamed time by splitting it into past, present and future, to mentally stretch its span.

Past

Memory is the mechanism that helps us revert to the past, not by registering duration, but by recalling the intensity of specific moments which affected us. Memory is not a timeline, but a collection of images that compose our story and sometimes ‘a few patches of light and shade are enough to provide relief’ and revive an instance of intense experience. With its genuine power to activate memory, light gains meaning as the bridge between the self and the cherished moments of our past.

Present

Intimacy is the spiritual state we constantly long for as a means of melting fears and seizing time in an eternal present. Bachelard observed that there is a ‘concentration of intimacy in the refuge’ and ‘(...) through its light alone, house becomes human, an eye open to the world’ through which ‘the house sees, keeps vigil’. Brought to life by light, the house becomes our protector and confidante, allowing us to be our genuine selves. Light is the fundamental catalyst for reaching intimacy: ‘One light in the night becomes the centre’ and ‘can isolate the heart’ from its superficial flow, only to reconnect it with an elevated consciousness, which allows us to ‘see the night for the first time’. All these instances of genuine affection point to the fact that ‘intimacy lies in simplicity’ and ‘there is no room for intimacy in palaces’. Thus, the power of intimate light resides in its humbleness, in its silent character, as symbol of seized eternity.

Future

Creativity, above all, addresses the future. It is the dream brought to life through our own hands, the incarnation of the better self and the fulfilled ‘vocation for happiness’. Creativity implies consciousness, which ‘rejuvenates everything, it even dominates memory’, because it comes with the promise of overcoming our assigned time and grants self-expression. Lighting can offer a strike of inspiration for a creative impulse or a refuge for creative ideas to thrive, being generator or incubator of creativity, either way, a meaningful component in the cathartic process of self-actualization.


48 Ibid. pp 36

49 Ibid. pp 29


III.3 LIGHT EXPRESSING CONTEXT

Throughout life humans develop a strong relationship with the environment, befriending the natural conditions of their habitat and guiding their actions according to the set of values of their society. *Nature and culture* shape humans’ understanding of the world as pillars of existence, as truths one can revert to when in doubt of what is beautiful or what is right, ultimately, as deepest roots of meaning.

Nature

Norberg-Schultz indicated the sense of self as an essential aspect in the creation of meaning, but identity is influenced by the physical context of our becoming, to the point where "human identity presupposes the identity of place." Place, as concentration of natural elements, teaches us about night and day, about cyclicity and regeneration. Our myths and beliefs relate to the nearby heights, seas or deserts and our sense of happiness is connected to the distinct atmospheres created by light throughout days and years. Understanding light is essential in determining the spirit of place, since the natural conditions of lighting influence peoples’ tendency towards certain atmospheres, mood and attitudes. Researching the lighting conditions as triggers for collective response, Volf observed that the short evenings in Mediterranean countries only allow for a brief overlapping of artificial and natural light and consequently, against the dark background, all lights seem white regardless of tone, leading locals to opt for cooler tones of artificial light. The long Scandinavian evenings offer prolonged hours of twilight, as background for artificial light, resulting into a preference for lamps with warm tones which balance the bluish nuances after sunset. The subtleties of natural light impact societies as a whole, and an awareness of natural context in lighting design does not address perception only, but celebrates the identity of the beholders, allowing them to recognize themselves in their illuminated surroundings.

Figure 11.
Natural light shapes beliefs and routines

Culture

Cultures are decisively influenced by the geographical contexts of the different regions on earth. As sum of beliefs, moral codes and traditions, culture is the expression of group identity, where locals found meaning in all the surrounding elements that superseded their control. Religions are variations of worshipping the sun, while the sky, the peaks of mountains, the depths of oceans are homes for gods. The inaccessible was conquered not physically, but mentally, by being interpreted as the *absolute* that sets the behavioural limits, the fears and the ideals of a population. The evolution towards a science based, globalized society did not wipe out the deeply rooted values that represent the different groups because people tend to defend what they find meaningful enough to consider as part of their identity. Moreover, these ideological values extracted from the natural environment are returned to nature, in the shape of man-made representations and homages of these values.

Therefore, when designers embark on lighting missions elsewhere, it is of utmost relevance to research the way people in those specific areas relate to light as a cultural component. There is a strong tendency to encode cultural valences while shaping spaces and a series of interviews with lighting designers across the globe revealed the rich diversity in the cultural interpretation of light, as in Japan, where residences use shoji to diffuse light and avoid any harsh contrast that may alter their peace. Cultural context is an essential indicator of the parameters appropriate for a specific situation, leading to meaningful design born from within, in such a way that the beholders can endorse it as extension of their identity.

III.4 LIGHT EXPRESSING COMMUNITY

‘Today we start to realize that true freedom presupposes belonging’⁵⁴ states Norberg-Schultz, while exploring the concept of dwelling in the world. When people gather together around the fire, they belong. They are part of the same experience that transcends individuality to a collective level, where all joys and sorrows are shared and understood beyond words. Fire in thus the catalyst of this experience, as the centre where all eyes and hearts meet, the flame that uncovers what unites us, rather than what separates us.

The connection with other human beings makes our existence not only bearable, but truly enjoyable, and lighting is called to set-up the background for the development of meaningful social relations. While ‘all lighting is social lighting’⁵⁵, as one lamp only can spark social life in a previously unlit plaza, lighting from a social point of view means ‘to experience doing social research and to engage with people and places’⁵⁶ in a quest to understand their real needs and the core values that fundament their collective life. Lighting that boosts social interaction requires designers willing to include the social investigation in their design approach, in a genuine quest to understand how people belong to their community. The meaning of light is not to embellish places or trigger ephemeral moments of amazement, but to quietly set out an environment so relevant for its users, that they effortlessly assimilate as ‘home’.

Figure 13. Light can enhance a feeling of belonging by mediating human interaction

⁵⁶ Ibid.
SUMMARY

The phenomenological concepts described previously can be summed up in a comprehensible table, to illustrate the cause-effect relationship between the perceived world and the assigned meaning. While the attribution of meaning is by no means exclusive to lighting and the list of perceptual components addressed by lighting is not exhaustive, a structured account of the findings offers an understanding of the dynamics between the 3 layers of meaning.

<table>
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<th>LAYER OF MEANING</th>
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Figure 14. Structure of meaning in lighting design
(Illustration by Dascalita. R., 2018)
DISCUSSION

In phenomenological terms, the assimilation of meaning displays a coherent structure and occurs at successive stages which unveil the layers of complexity of the incoming message. Yet in cognitive terms, humans become aware of the value of light for their basic needs mainly when lighting fails to cover their needs, triggering negative responses like anxiety, disorientation or fear. Additionally, when people assign meaning to space, they become conscious of the shift and intensity of the affects aroused during the spatial experience, without necessarily delving deeper into their system of values to find the root of their emotion.

It is the lighting designer who must be aware of the quality of his message and master the segregation between an ephemeral affective reaction and the permanent imprint of meaning. Encoding meaning thus becomes a key point in human centred lighting design and can follow the inversed route of assimilation:

<table>
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<tr>
<td>II. AFFECTS</td>
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<td>III. BASIC NEEDS</td>
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<td>REFINE THE CHANNEL</td>
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</table>

Figure 15. Encoding of meaning in lighting design. Inspired by Russel, S. (2012) (Illustration by Dascalita. R., 2018)

Additionally, designers could delve into their own experiences with illuminated spaces as means of comprehending the ability of lighting design to create meaningful places. As example for the current study, this ability is illustrated through the analysis of two case studies which have been experienced and registered as meaningful by the author of this thesis.

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The Museum of Moving Images in New York and TATE Modern in London both employ light to orchestrate vivid sensual experiences while telling two different stories. As detailed in the case studies, at MoMI lucent clouds of diffused light ‘lift’ one towards a saturated blue capsule-cinema, telling a story about the freedom of the body, liberated from its weight and sensorial constraints. At TATE, lines of light, along with suspended glowing boxes and large scale shadows invoke the freedom of spirit, liberated from the virtual limits of space or time. Each of these affective experiences are meaningful in their own right, as light raises awareness of human limitations, yet in both cases light does offer a vision of an alternative situation, where these limitations have been overcome. What remains meaningful in both cases analysed is the experience of light as part of a designed space, which transcends sensuality and raises wider thoughts on the human condition, challenging one to envision a better self, inspired by the very world unfolding around them.

CONCLUSIONS

Light is relevant only in relation to the matter it touches, as it remains invisible in the absence of material support. Similarly, in the absence of light, the material world remains flat, dark and distant. With its ability to impart colour and warmth, to set rhythms and cycles, to shape spaces and count time, light is the mere soul of the otherwise abstract world around. From this position, light becomes the one extrinsic element that empathizes naturally with the human soul, the sensitive revealers of meaning.

This thesis is focused on sketching a phenomenology of lighting, illustrating how the experience of light reverberates deep into the human soul and sparks consciousness of existence. Yet this approach on lighting design spans into numerous branches, each of them potential subjects for further research. Thorough empirical investigations concentrated on subjects from outside the design field are fundamental to determine the precise impact of each layer of meaning, to reveal additional perceptual components of light that convey meaning or to understand the dynamics between the three layers of meaning described here.

Lighting designers can master the inherent qualities of light into shaping meaningful places which engage audiences into conscious, existential experiences. When the designers’ intent is to use lighting to create meaningful environments and add value to peoples’ lives, it is those people who need to be the starting point of the design process, at the same level of priority with the spatial canvas light is applied on. Their needs, their ideals, their identity are rich generators of lighting concepts and the designer can trust that his effort to mirror these values with light will result into an augmented sense of connection among community members, between humans and the illuminated space, but most of all, between soul and mind. And that will ultimately be the meaningful light.
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The findings in this thesis outline a theoretical base of the attribution of meaning, elaborating on the stages at which the human brain internalizes the perceived space as meaningful space. These stages are not chronological, nor hierarchical in quality, but they do interlace and the following analysis of two case studies aims to detect the dynamics between the three layers of meaning and to present concrete examples where lighting design elements are fundamental for an enhanced experience of space, as trigger of meaning.
MoMI, the museum dedicated to the history of film and moving images, reopened its gates for public in 2011, after being renovated and rebranded as a cultural icon in Queens. The overall design, which won the Red Dot Award in 2013, is creatively depicting the concept of ‘moving images’, in line with the central theme of the gallery, but the dynamics of the interior relies greatly on lighting, which frames the spatial experience and divides the various functions hosted within the museum.

**Evaluation of the Experience**

The entry lobby impacts from the first step in: walls, floor and ceiling are dressed in lucent white, and the scarcity of furniture allows light to jump uniformly from one surface to another. The space is ample and through the glass wall opposite to the entrance natural light invades in, melting the spatial boundaries and overwhelming the eyes before subsequent visual adaption. The visitor succumbs to this weightless world and experiences a floating sensation.

A blue tunnel on the right hand side reflects its color into the lobby, creating a cloud like atmosphere and inviting visitors to enter and discover what lies at its other end. The floor of the tunnel is bordered by two rashes of light projected from under the rail, leading the way into a movie theatre.

The movie theatre opens as a vast room in the shape of a capsule, fully furnished in ultramarine fabric. The seating arena is detached from the side walls leaving space for linear lighting to up graze the vertical surfaces and the ceiling from under the racks level. The immersion into this alien space is complete and the eyes run on the huge screen displaying an explosion of colors, so dynamic that one can almost hear it burst.
The experience is choreographed as a journey starting in a diffused, white cloud, passing through a narrow portal into an alternative dimension, where vision is saturated and imagination is released. Light levels lower dramatically as one progresses from the lobby into the cinema but brightness is replaced by color to keep the senses aroused. The space contains direction, marked by pools of white light in the center of the lobby or by washes of light on the ultramarine canvas in the cinema, but lacks depth due to either feathered boundaries in the lobby or dissolved boundaries in the cinema. The overall impression is of a shadowless world, where space and time, as we know them, are suspended. Instead one feels like floating in an alternative reality of saturated blues or blurring whites, always pushing the senses into a vivid immersion that marks the memory.

**KEY WORDS:**
FLotation, IMMERSION, JOY, SURPRISE, CURIOSITY, ELECTRIC BLUE, BLUR, LIMITLESS, JOURNEY, ALIEN

**THE MEANINGFUL LIGHT**

Exploring this space, one attains the impression of landing into an alternative world where senses surpass their natural limitations. Alongside interior design, light triggers constant sensations of levitation and immersion, enabling one to float weightless within an electric blue atmosphere. The lighting design is focused on fostering daydreaming while telling a story about space travel, speculating on the human need for exploration and suggesting the beauty of a life based on visual stimulation and freed from the body weight. The space encourages permanent selfportrayal in this alternative world and such image comes with a vision of constant happiness and joy, which remains engraved in memory as the meaningful discovery enjoyed at MoMI.
TATE Modern is hosted in the building of the former Bankside Power Station, originally built in 1947 by the architect Sir Giles Gilbert Scott. In 2000 it opened its gates as an art museum that would become a cultural icon of London and a nest to celebrate modern artists, while in 2016 the new Switch House extension consecrated its status as the most visited museum of modern art in the world. The Turbine Hall offers a spectacle of light, an interplay between natural light filtered through narrow openings and artificial lighting sensibly retaining an industrial image.

**EVALUATION OF THE EXPERIENCE**

Entering the Turbine Hall one encounters a majestic space, opening in height and depth. The eyes are caught in an accented perspective enhanced by several architectural and lighting elements that lead sight towards the long direction of the space. This direction is sustained by a central opening in the ceiling, running along the entire length of the hall and dropping down the wall into two monumental windows on the East-West axis. Several yellow glowing boxes accompany the perspective from the Northern wall, suspended at different levels, as if they were in constant movement. A continuous row of rectangular floodlights washes the floor from the mid level of the Southern wall. Parallel lines of light of different lengths mounted on the underside of each floor rush to the same virtual center, describing a restless space, where flow of movement is naturally directed. The floor is finished in a soft gray vinyl which, during the gloomy London days, scatters the diffused light across the adjacent surfaces.
The Meaningful Light

The spatial experience is dominated by a sense touch, with patches of light and shadow moving throughout the hall according to the time of day. The show of light captivates all senses, isolating the individual from the distant chirping echoes, into silent contemplation. As light tells its story about the unstoppable flow of time an image of infinity opens, awaking a melancholic consciousness. The space itself talks about freedom. All around, lines of light, glowing boxes and skylights seem to fly, joining each other into a far-off, luring center, inspiring one to follow this dynamic lead and fly towards their own liberation.

Key words:
Perspective, convergence, line, box, suspension, glow, movement, natural light, time, freedom, fly

Figure 24. TATE: Turbine Hall. Spectacle of light before sunset.

Figure 25. TATE: Turbine Hall. Spectacle of light in the morning.

Figure 26. TATE: Turbine Hall. Central bridge.

In this light filled atmosphere, one could stop for a moment, allow themselves to be the only static element of this dynamic environment and watch how zenith light constantly reshapes space. Several steps into the hall, one might turn their eyes to the entrance and grasp the full parade of light. A tall window divided into five narrow segments filters light in a descending movement, linking earth and sky and leaving one to feel humble. On a sunny day, close to sunset time, the experience is further enriched when five sharp beams of direct sunlight sweep the walls and the floor in a five minutes ‘light dance’ sequence. It is during this performance that one is reminded of the power of light, which reveals space, but more dramatically here, it reveals the fast pace of time.