1 INTRODUCTION

Artificial public lighting combines governments planning, economic and political policies, technological and historical issues and social aspects. A comprehensive exploration of public lighting of the XIX century focused on social aspects analyzing its history in relation to the evolution of the western society[1]: lighting represents the social power of who decide and, more rarely, who is using it, the citizens. Illuminated cities affect people behaviours, feelings, thoughts, attitudes: urban lighting should respond to the uses and needs of people in different context and times, reflecting the true meaning and purpose of public space[2]. Shaping the lit space for people means exploring the true connection of people, light, and urban environment, using a "social approach to lighting design [3, 4].

Light at night provides valuable benefits: it is something that people deliberately seek and can be an essential aid to road safety, personal security against crime and evening social activities because it engages people and increases life in cities after dark. Light has a cognitive, aesthetic and symbolic role: it is useful for way-finding and communicating information; it can help generating new ways of understanding and identifying places with an emotional effect [5]. The general increase of light is the answer for creating better places to live in: poor lighting practices and the uniform use of lamppost have a negative impact on the visual amenity of the night sky: while striving to obtain energy-efficient lighting, too bright environment afflict people, animals and plants with light pollution.

Exploring the urban night with the eyes of the citizens shows clearly that cities are rich in various appreciated light effects: people like lighting with variety and different forms that pervades buildings’ walls, sidewalks and streets. Temporary, public or private, unreal, unexpected and unconventional “found lighting effects” enrich the experience of the animated, colourful and surprising city at night. These kind of light weren’t really meant with a functional lighting role but they really enrich the texture of the night: who owns and designs it? This research is about the opportunity to explore the nighttime environment to such a large extent.

2 RESEARCH QUESTION

If urban lighting is a positive tool for people engagement and people-city relational trust, what kind of lighting performances are experiencing people at night? How people look at their nocturnal cityscapes, what features they are more attracted by? What preferences, impressions, comments of interest, feelings of appreciation these lighting features elicit? The research would like to show the connection between the perceived pictured attributes of lighting of the city at night and the people emotional appraisals.
3 METHOD

The research is based on a visual survey using user-generated content available freely on social networks. It is an ongoing virtual tool based on the observation of lighting stimuli (pictures) and on the understanding of meaningful comments and bias delivered freely in order to grasp the different perceptions of urban lighting environments from all around the world: the Atlas (map) of Urban Lighting Experiences 2.0.

3.1 PROCEDURE

Firstly an exploration of pictures of cities at night surfing on the most important photo sharing database, Flickr [6], in order to compare urban lighting environments worldwide and to derive meaningful insights about people’s attitudes, imagery, feelings. The most clicked, viewed, liked, cited and commented night photos detected on several meaningful groups of the Flickr database created a narrative map of images at a world scale. They are qualitatively interesting because they represent similar emerging lighting features, indicators of preference and variables of interest.

The second step of the process was about focusing on the social impact of photos of cities at night: subjective opinions, open thoughts, evaluations, individual judgements, comments, opinions of the community members were examined with quantitative and qualitative tools in order to detect some insights about the appreciated features of lighting of the night contemporary cityscapes.

3.2 PARTICIPANTS

The survey is based on collected and selected night-time city pictures that are firstly photographed and then posted by professional photographer or common internet users and then liked and commented by the users of the same social network. They are located mainly in Europe, Asia (China, Japan) and America. The participants are both professional, artists, neophyte photographers but they all have in common the passion and interest for photography. They are citizens that picture the city at night with their “particular photographic” eyes, sharing their particular digital visions with their friends. Sharing means that other users can view pictures in thumbnails and slideshows, they can classify photos into albums, as well as add annotations (such as captions or tags) and comments.

3.3 LIGHTING STIMULI SELECTION

The lighting urban nightscape database was elaborated by exploring both pictures collections and discussions of thematic groups such as Night Images, Night Lights, Just Street Photography, After Dark – Night Photography, Urban Night Shots, Vivere la notte – P3/C3, Νύχτα, Night, Nuit, Nacht. The selection criteria was based on several features:

- reality and not artistic/digital elaborated pictures (no long exposure, blurred lighting but objective views)
- people view angle (no bird’s eye, no skylines but streetscapes sized at human level)
- city outdoor night-time (no crepuscular images)
- images in colours (no black and white, no deviated colours)
- high classified images (visualization more than 100 and meaningful comments more then 5)

The database shows conventional and unconventional lighting representation of individual creative photographic choices: making a picture of the city at nighttime means interpreting the scenario by choosing the object to picture and its light and shadows with a personal perspective.[7]
4 RESULTS

The analysis of the database was focused more on qualitative aspects in order to get some insights about the perception of the city at night: codes, design guidelines and measurable indices describe quantity of the luminous environment and no research had deeply addressed the impact of urban lighting on human psychology. This research explores what lighting features in actual use are preferred by people instead of relying on theories and normative. The results are represented with visual tools in a world map with infographics [8] showing trends of similar preference and attitudes about lighting features. The achievements can be transferred into lighting design guidelines in order to support the design process for the creation of better lit cities. The research show that not designed, unconventional and informal lighting elements has a wider growing potential of changing the human experience of the urban nightscape. Variety, colours and contrasts are the most important features of a lit urban environment. In the following paragraphs these lighting attributes are deeply examined.

4.1 PREFERENCE FOR WHITE WARM LIGHTING

This kind of lighting is highly clicked and commented and it is generally used in European ancient cities which are characterized by “historical decorative buildings” whose construction materials are exalted by white warm lighting. It seems to be used in human sized context, for pedestrian only or for a mixed use because it renders the space in a more “intimate and human size way” accompanying the human outdoor activities such as walking, shopping, relaxing, entertaining and having leisure time.

Warm lighting is generally the result of public lampposts, lanterns or private lighting systems such as the lit shopping windows: these elements, in particular, create a “sense of perspective and direction” and become a useful tool for way-finding for their rhythmical positioning. Other warm
white tones derives also from temporary Christmas decorations such as “chains and stars of light” shining in the night and attracting people attention and curiosity. (Figure 1)

4.2 MONOCROMATIC LIGHT FOR OLD CITY CENTERS

Scenes lit by orange and yellow monochromatic lighting represented by the old lighting technologies of HPS and LPS are very common in European old city centers full of pedestrian alleys and little urban passages. This kind of lighting is associated mainly with old lighting fixtures such as lanterns and ancient lamp post creating an “ancient and dreamy beauty” and an atmosphere of “medieval fairytale”. They creates a “mysterious and ancient atmosphere”, arousing the desire of exploring the environment even if the light create “dark shadowy zones”. The intense scenes in “golden light” are often empty, generating a sense of silence and peacefulness, a charming, involving and magic atmosphere that is never associated to insecurity feelings. The warm tones seems to heat the cold climates with “enclosed fragments of hot sun tones” into the lanterns. When these old city centers are lit with white light, it seems “too much intense” altering the cultural preference and traditional rooted references of a warm atmosphere. (Figure 2)

4.3 CONTRAST OF WHITE LIGHTING

Pictures showing the contrasting use of warm and cold white lighting are highly viewed and appreciated: they generally referred to urban environment such as vehicular street of modern cities and pedestrian commercial zones of city centers. The warm lighting comes from public lighting fixtures, while cold white lighting comes from temporary or unconventional light systems such as:
- shopping signs and billboards;
- car headlights;
- underground entrance.

The lighting juxtaposition comes also from the casual use of different lighting technologies in the same urban scenario: older HPS in contrast with more recent white lighting sources or vapour mercury sources. The juxtaposition of different CCT of white lighting, generally, are associated to positive feelings for the interesting ambiance determined by the warm/cold opposites. Comments suggest that this contrast is useful for “way-finding” and also for “increasing the desire to get out and take a walk in the town”: people recognize the “beauty of the contrastive mood” and the “atmosphere” defined by the “fascinating duality” of diverse lighting colours. (Figure 3)

Figure 3: Example of the juxtaposition of cold white, warm white, green white lighting

4.4 COLOURED LIGHTING FOR A MEANINGFUL USE

Urban nightscapes are generally pinpointed by the pure primary colours of the traffic lights that regulate the coexistence between pedestrian and car drivers. Not having a lighting function, they are the main signalling elements to claim the attention of city users with particular chromatic codes of red, yellow and green. In general they are not so much evident in the mixed use streetscapes but they became of particular interest when rainy or foggy nights and wet pavements create “particular coloured reflections” and “blurred and floating coloured halos” in the distance. Seen from far away, traffic light can orient people, creating a sense of direction and way-finding.
Signalling lighting for traffic become a communicative tool in complex mixed-use urban situations that are rich in other kind of informative and communicative lighting elements such as private commercial advertisement and signs. (Figure 4)

The unconventional lighting of signs, billboards and advertisement pervade the street with information “busyness” that generate a “communicative overload” while also contributing to the identity of the urban environment. Particular American and Asian cities, mainly New York, Tokyo and Hong Kong, show night streets that are invaded by luminous and coloured billboards that have no importance in their singular meaning but are interesting because they define the scene, make the city alive and vivid.

The most innovative advertising signs are “cinematic”, “eye catching” and coloured displays made of LEDs; in other particular cases they are made with the old tubular neon technology showing their retro stylish luminous pattern. Despite from the technology, they define the ambiance of the space in particular with rainy conditions and wet asphalts thus creating “luminous rainbows reflections” on the street pavements that are highly appreciated and positively preferred. This “fantastic sea of light” create a “magic, unreal street nuance, with emotional, bold, vivid, brilliant, stunning colours”. (Figure 5)
Figure 5: Example of coloured lighting for communication and ambiance of the urban environment

Figure 6: Example of coloured lighting used for landmark, ambiance, communication and wayfinding
Other “exceptional” unconventional lighting elements such as lighting performance of street artists, temporary installation for events such as Christmas redefine the identity of the urban scenery in a temporary and special way that is considered particularly interesting. Huge lighthouses, billboard, monuments and facades lit in stratified layer of colours becomes significant symbols with “bold, vivid, stunning colours” as a landmark, in order to orient people and define the identity of the space. Iconic, strong, aggressive and vivid coloured lights become a recognizable symbol identifying a “nocturnal amazing and stunning scenery”. (Figure 6)

5 CONCLUSIONS

The results showed that the making of places means the interplay of light and space, light and form, light and surface, light and texture, light and pattern, light and weather conditions, and, most important, light and human activity [9]. The most selected, liked and commented images represent situation of not uniform lighting with spots of mixed colours deriving from street signs, advertisement, lamppost and reflected by the wet or icy pavement or foggy night skies. These natural and weather elements amplify and maximize the presence of light and the playfulness of colours. Many liked examples shows lighting in relation with materials and conditions of pavements: cobblestones, stones, asphalts have a primary role in the lighting behaviours, reflecting, refracting, diffusing, scattering the light while attracting attention and interest of people.

The research show that light provides the mystery of wandering and discovery and makes people feel good: as Kaplan and Kaplan proposed, lighting perception involves 4 main concept of coherence, complexity, legibility and mystery, relating to human’s constant need to extract information from his surroundings [10]. Night environment has to provide exploration, stimulate the senses, while providing sufficient information to allow evaluation and assure a sense of safety [11]. Night picture with not uniform lighting distribution, made of darkness and light were considered more pleasurable, sometimes claimed to be “scaring, unsafe, dangerous” but at the same time “moody, mysterious, peaceful, dramatic atmosphere”.

Results show that perception is affected by cultural judgments and biases: different countries shows different attitudes toward artificial lighting their cities and also specific environmental and architectural features that show specific solutions and preferences of lighting scenarios: it is the case of advertisement in the streets of American and Asian street versus the use of monochromatic yellowish lighting for the ancient European city centers.

Insights from the research suggest that lighting design should be focused on the quality instead of quantity and should not be defined in a rigid order but rather provide a framework of different lighting variables in order to formulate an overall, comprehensive lighting design plan of the visual and emotional characteristics of the nighttime cityscape.

Lighting should be dynamic providing possibilities for excitement and repose and points of emphasis and interest within the place, while satisfying the psychological sense of security. Complexity and variety were more appreciated in respect to uniformity [12]: it means that the enrichment of the nocturnal public domain is not reached by flooding everything with light. Images selected and preferred show a vivacity and luminosity that is made of a mixed use of private and public lighting that is so important for the life of places.

Night city scenery are more appreciated when they combine different lighting effects such as a general ambient luminance, focal glow and the play of brilliant that define a good lighting effect only if used together. If the background light is necessary for revealing the night form of the city creating a comfortable restful and reassuring place not reproducing the effects of daylight but
defining a new imagery of the city at night. Focal glow is important to command attention, attracting interest and pointing the important element of the night cityscapes. More than this, a third set of lighting elements that are important to create magic atmosphere, exciting people and charming their senses. These play of brilliant defined by lines, dots, sparkles, glitter, glow of light creates an atmosphere of enchantment, heightening all the sensations.[14]

To conclude, it is important to talk about the language of urban light found by this exploration: a complex grammar that includes qualitative adjectives and descriptive terms is used by people which reveal to have an interest in lighting. These qualitative terms referred to the identity, the ambiance and perceived image of the city [15] are also useful to understand the deeper and more vivid understanding of the lighting experience and the visual awareness of people that show to have built a particular culture of perceived light by means of lighting pictures about the spaces they inhabit, picture and share.

6 BYBLOGRAPHY