13

**P
AD**

design
for
territories

Colophon

002

001

TANGIBLE AND INTANGIBLE

Envision the nocturnal territory: Urban lighting as a design strategy for the recovery of places

by Helena Gentili and Daria Casciani

METADESCRIPTION

The paper aims to picture the nocturnal territory as an important design lever for cities and address artificial lighting as an urban design strategy for recovering urban territories.

KEYWORDS

Artificial lighting, nocturnal territory, lighting design, urban strategy, design toolkit

ABSTRACT

This paper aims to address artificial lighting as an urban design material and to picture the nocturnal dimension of cities as an important design lever for the recovery of a territory. This research has focused in the exploration of tangible and intangible aspects of urban lighting in order to propose a design toolkit based on multidisciplinary backgrounds to rethink the social urbanity from the street level perspective at night. Thus, to picture the strategic use of artificial lights to reinvent public spaces at night without the dominance of technology over environmental and aesthetics quality.

1. Introduction

Correspondences between space and society have been transformed, so as the perception and functions of day and night in contemporary cities, so why not considering the nocturnal dimension of cities as part of the design process? Grounded on the authors' previous works and research experiences (Casciani, 2014; Gentili, 2015) in the lighting design discipline, this paper would like to describe public spaces and urban lighting as a common design resource with the potential to stimulate local economies and reinvent the nocturnal territory.

Nowadays the expansion of human activities after sunset is claiming for a strong design involvement in the discovering, envisioning and empowering of the urban spaces at night as an important design lever for a sustainable development of territories. This shift needs an understanding of the problems and limitations of the nocturnal dimension of cities but also of the opportunities offered by using an intangible and flexible material such as artificial lighting as a design tool to recover a sense for places both in terms of identity and in terms of social urbanity.

The paper will highlight intangible and tangible aspects of lighting in order to understand and characterize the nocturnal territory, by analysing the relationship between the architectonic shapes, people's experience and the nocturnal urban interpretations by taking a street-level perspective. More than this, the paper aims to emphasize the strategic use of artificial lighting in urban design by presenting a set of tools which are useful for communicating and designing with a multidisciplinary background.

2. Stating the limits and the opportunities of nocturnal territories

The problematic of loss of territorial reference, due to several and disperse hybridization of functions, is much accentuated today, in a condition that has been defined as *"understanding space-time"* (Harvey, 1990) due to the processes of acceleration of production cycles and therefore of trade and consumption, until the abatement of spatial barriers. Besides, the most important issue for this paper is the overlapping of day and night conditions. In that sense, the valorisation of the territory either day and night features should be implemented especially when designing with lighting because local culture means local light.

Even though lighting is critical to our perception of the urban environment, yet its consideration remains peripheral to professional discourse and its role 'invisible' to the community. Frequently, the lighting design is viewed as a step afterwards the architectonic or urban design process. Consequently, cities have been deformed by the play of uncontrolled and misguided lighting schemes, derived by a unilateral design that takes into account only the technical-scientific needs, underestimating the aesthetics, social and symbolic aspects of lighting in the urban territory (Lambertucci, 2001).

The increasing permanence in public spaces, in other words, the nightlife of a territory, is strictly related to the development of artificial lighting systems since the industrial revolution (Schivelbusch, 1995). This relationship has already altered the physiognomy and the meaning of life in the dark, sheltered and far from the diurnal rhythms. Thus, the nocturnal territory could be considered as a *"different identity builder"* because it is conditioned by the artifi-

cial lights properties and the dimensionless character of the spaces since the darkness has the ability to cancel shapes transforming the territory at night as an immaterial background, a black canvas whose identity can be reinvented each night differently. (See fig.1)

Fig. 1. Day and night pictures of the Natural History Museum in Rotterdam. Relationship between external and internal lighting and positive/negative effects due to an immaterial background (2014). Picture by Helena Gentili

Nevertheless, the contemporary urban nightlife plays a significant role in place-making strategies. More than simply a means of amusement, the night-time entertainment industry has contributed to widen the urban economy with its potential to attract investments, creative people, tourism and boosting the night-time economy by creating job opportunities under different luminous conditions. In terms of artificial lighting, this phenomenon has challenged the nocturnal territories not in a standardized way. From a positive/attractive approach, there are the Festivals of Light offering creative non-standard lighting techniques communicating a different message about the nocturnal territory. On the other hand, negative/repulsive results are represented by the use of massive and bright commercial signs defining stereotyped readings of the city, which can create more confusion in defining the urban image at night. (See fig.2)

Fig. 2 Right: Flying Carpet installation by Daniel Buren in Torino on the occasion of the Light Festival Luce D'Artista, (2009). Left: Time Square bright lights and luminous billboards in New York,USA (2010). Pictures by Helena Gentili

Urban lighting is more than energy and costs statistics related to savings: by guaranteeing visibility, accessibility and safety at night, it can influence social and cultural life of the nocturnal city and, as a consequence, the improvement of the economy and the environment as well. Lighting is primarily intended for people's experience and perception of the urban space and it should be considered for the beautification of public spaces, the social engagement and well-being of its inhabitants (Narboni, 2004; Brandi & Geissmar, 2007; Raynham & Gardner, 2001; Raynham, 2007).

3. Nocturnal territory of the city described between tangible and intangible aspects of lighting

The relationship between lighting and the urban territory at night can be perceived by human beings through many different physiological, cognitive, psychological and interpretative mechanisms. In this complex perceptual phenomena, some aspects can be objectively measured and experi-

103

mentally evaluated (tangible aspects of lighting) otherwise others can be relatively interpreted or subjectively considered (intangible aspects of lighting). Therefore, the relationship between lighting intercepting tangible and intangible elements of the city and its inhabitants have been selected as following:

Tangible aspects of lighting in the public realm
- *Urban Accessibility:* The accessibility of a place can be measured by looking at the physical and visual connections to its surroundings fundamental characteristic to discover the nocturnal city. Hillier and Hanson provided an entire methodology to measure this relation through the concept of integration, connectivity and accessibility, which construct social and cultural understanding of urban places (Hillier & Hanson,1984). Those principles and methods have been only applied for the daytime of the city but result to be useful for understanding the urban integration at night.
- *Urban Form:* The day and night views of the same territory allow us to make parallels and to establish a common language to interpret the nocturnal image of a territory: by using the same point of view, it is possible to compare the positive or negative impacts that lighting might act upon building structures and on public spaces. Observation principles, such as complexity, selectivity, subjectivity, experience and contrast have a key role in the nocturnal visual perception of the urban form. The luminous surrounding will determine the required luminance contrast in order to perceive the hierarchy and establish an orientation route in the space related to the urban form. (See fig.3)
- *Colour and Surface Materials:* The interactions between col-
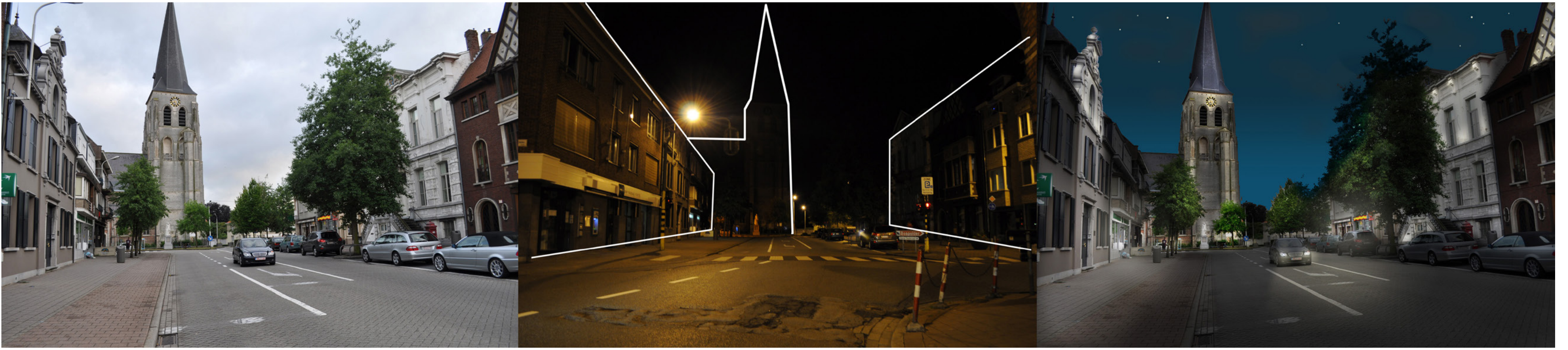
Fig. 3 Day and night view in order to select the most representative aspects of the urban form to propose a lighting scheme illustrated by the render image. Urban form survey for the Lighting Masterplan of Antwerp, (2011). Author: Studio Susanna Antico Lighting Design

our and lighting in the city determine the nocturnal appearance and works as a visual communicative tool. It requires an accurate study of the city components in order to establish a directive for this multifaceted and subjective relationship between intrinsic colours from the urban space, the luminous information from the environment and coloured lights. The binomial light-colour has more than ever become a tool for reading the nocturnal urban realm or a method to communicate importance to an element of the design or from the context.

- *Light Pollution:* Concerning the issue of sustainability, light pollution is an unwanted consequence of outdoor lighting and includes such effects as glare, sky glow, light trespass, light clutter, light profligacy and absence of darkness. It is necessary to avoid light pollution in order to better design, taking in consideration the territory as reference and to control lighting effects when and where it is needed.

- *Energy Consumption and Costs:* Energetic sustainability is conceived as achieving the desired illuminance levels and lighting quality in a given application with the lowest practicable energy input. The efficiency of urban lighting is determined by the selection of the most suitable lighting source in combination with the appropriate lighting

fixtures accompanied also by intelligent lighting management systems and maintenance procedures. All these elements contribute to the longer lasting life span of urban lighting ensuring the performance of the entire system.

Intangible aspects of lighting in the public realm

- *Human Perception:* Visual perception is defined by the relationship between light and space, which is perceived by the eyes and interpreted by the brain based on background experiences. David Canter (Canter, 1977) describes the space as a unit of *"environmental experience"*, where the knowledge about physical attributes, emotional cognitions and human activities is useful to completely understand the perceptual relationship between places with people: this underlines the implications of cognitive and psychological lighting factors of the inhabitants towards the environment in the design activity.

- *Perception in Motion:* the urban environment at night is generally perceived in movement, walking or driving, which involves the necessity to consider the nocturnal territory as made of a sequence of events that can be used as references to decide how lighting will contribute to the comprehension of the space for both safety and interpretative reasons. The nocturnal landscape from an in moto point of view can be described in a serial vision (Cullen,1971) which is related to the physical movement, to the idea of temporal continuity and to the necessity of wayfinding and navigation of the space. (See fig.4)

- *Perceived Safety and Security:* Many studies (Bilotta, Bonaiuto & Bonnes, 2010; Welsh & Farrington, 2008; Pease, 1999) have explored the issue of the relationship between lighting and safety, concluding that safety perception is dependent on a series of factors other than solely outdoor

Fig. 4 Nocturnal serial vison survey following a determined route to understand the surrounding lighting conditions near the area of Atjehstraat in Rotterdam (2014). Author: Helena Gentili.

lighting. The issue of the correlation between safety and lighting is highly debated: if on one hand, there were certain studies reviewing that improved lighting results in less outdoor criminal behaviour in homogeneous communities, other studies do not support this results but conclude the opposite or controversial outcomes (Farrington & Welsh, 2002). In addition to this, the research shifted gradually from the measured safety (evaluated in terms of decreasing number of illegal and criminal acts) to the perception of safety (that is a more subtle and subjective impression).

- *Atmosphere Experience:* Atmosphere is not defined as an affective status, but as an affective evaluation: it means that the perception of the atmosphere of the environment is expected to be independent of people's emotions (Vogels, 2008) of the environment and it is fundamental to the interpretation of the lighting conditions of the urban realm.

"Urban atmospheres are most often created by specific materiality, scale, rhythm, colour […]. Materials, colour, rhythm and illumination are strongly atmospheric" (Pallasmaa, 2014). These elements can influence the physiological, cognitive, affective, interpretative and evaluative perception of human beings (Bell, Greene, Fisher & Baum, 2001).

• *Urban Rhythms:* temporal understanding of territories (Lefebvre,2004) which is derived by considering the urban playground in a dynamic perspective where the flows of people, routine performances or nightly rituals lead to the idea that places are in constant processes of transformation. The sequence of these informal moments of spontaneity, lucidity and flexibility is related to the urban rhythms in order to better design with lights in the nocturnal city. This provides different interpretations of the urban territories and different experiences either during the day or during night that could be integrated in the design process of the nocturnal territory. (See fig.5)
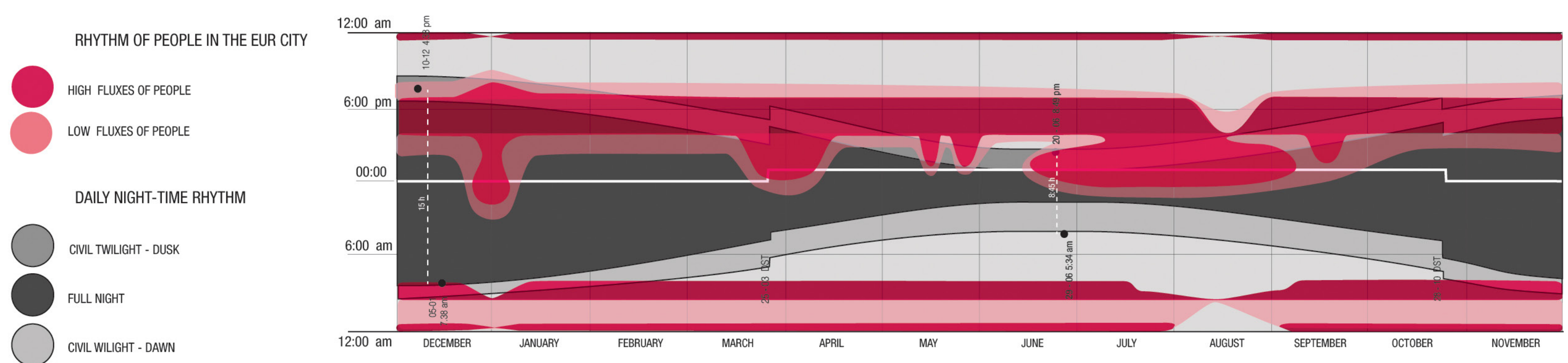
Fig. 5 Urban rhythms analysis of EUR Rome developed for the International competition Urban lightscape, Genius Luci (2015) Authors: Daria Casciani, Helena Gentili and Studio D'Alesio e Santoro

4. Toolkit for discovering and envisioning the intangible aspects of urban territories of the night

In comparison to the tangible aspects, the human and social value of lighting (intangibles) is more difficult to estimate: theories, methods and models from social studies, behavioural sciences and environmental psychology can be used to assess the intangible aspects that link the nocturnal territory of the city with people and lighting (Tillet, 2006; Tillet, 2011; Bordonaro & Aghemo, 2006; Amendola, 2009). The connection between artificial lighting and the human scale is one of the key aspects, since artificial lighting has a strong influence on the behaviour and activities in the space. The measure of man is not a metric and objective measurement but a complex and relative one; perception is not only individual but it is also cultural (Abbagnano & Fornero,1999). The following paragraphs presents a list of tools, which enable the designer to better investigate and envision the intangible aspects of urban territories after dark.

The designer as detective of the real life of the nocturnal territory
A way to interpret the nocturnal landscape is the *Flaneur approach* conceived as a real-life experience, which is a not so common but a highly recommended approach in urban lighting for analysing the nocturnal human and social experience of the territory (Bordonaro & Aghemo, 2007) The flâneur approach works by taking the pedestrians point a view to experience and understand the nocturnal territory. Several different tools can be used such as the *Nightly Walking Methodology* (Jenks, 1995; Gehl, 1991; Whyte, 1980) and the *Nocturnal Serial Views* that represents the visual experience that people have of the nocturnal territory.

From on-site to on-line, the *digital Flaneur* can use the *Video-Monitoring Tools* for observations of real activities and night-rhythms, which can be done also remotely by sensing the city with video cameras, that are able to acquire real-time data about the pattern of use of the territory of the city after dark (Köhler & Sieber, 2011). The *Time-Lapse Techniques*, in between on-site and on-line tool, will reveal inhabitant's paths and habits along the hours of observations and from this, the lighting strategy can be elaborated in a more flexible and mutable way in order to address lighting where and when it is useful, depending on different uses and necessities.

The *digital Flaneur* can also navigate social forum, virtual discussions and social software applications in search of information and content freely and openly generated by the community. Its practice is based on a virtual ethnography, called *Net-nography* (Kozinets, 2010). An applied example in the urban lighting design has been the *Atlas of Urban Lighting Experiences 2.0* (Atlas of Urban Lighting Experiences 2.0, 2012), an attempt to map the different perceptions of the nocturnal image of the city from all around the world, using user-generated content available freely on social networks (See fig.6).

The designer as educator and storyteller in exploring the nocturnal territories

People can be involved in exploratory walks and talks at night, aimed at discovering and taking care of the urban night-time image. *Lighting Walks* are conceived as an educative and storytelling tool aimed at increasing the critical reflection about lighting at night. The *NightSeeing*™ (NightSeeing, 2016), which is a walking tour of the city lead by a lighting designer and *Light Ride Milano* (Light Ride Milano, 2015),

PREFERENCE OF WARM LIGHTING

VISUALIZATION

<500
500 - 1000
1000 - 5000

LIGHT

WARM WHITE CCT

HPS (YELLOW)

LPS (ORANGE)

LIGHT FUNCTION

WAY - FINDING

COMUNICATION

LANDMARK

SIGNAL

AMBIANCE
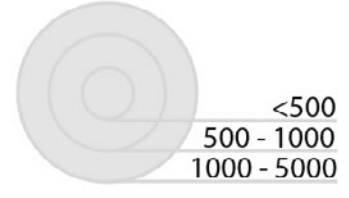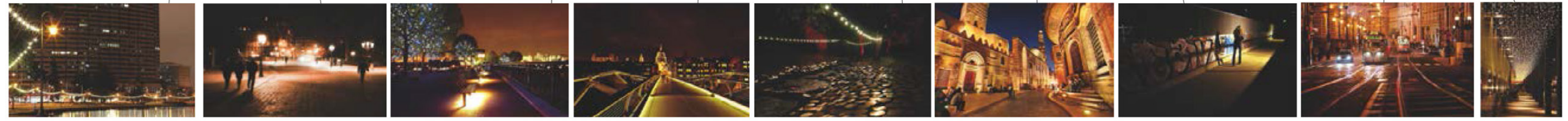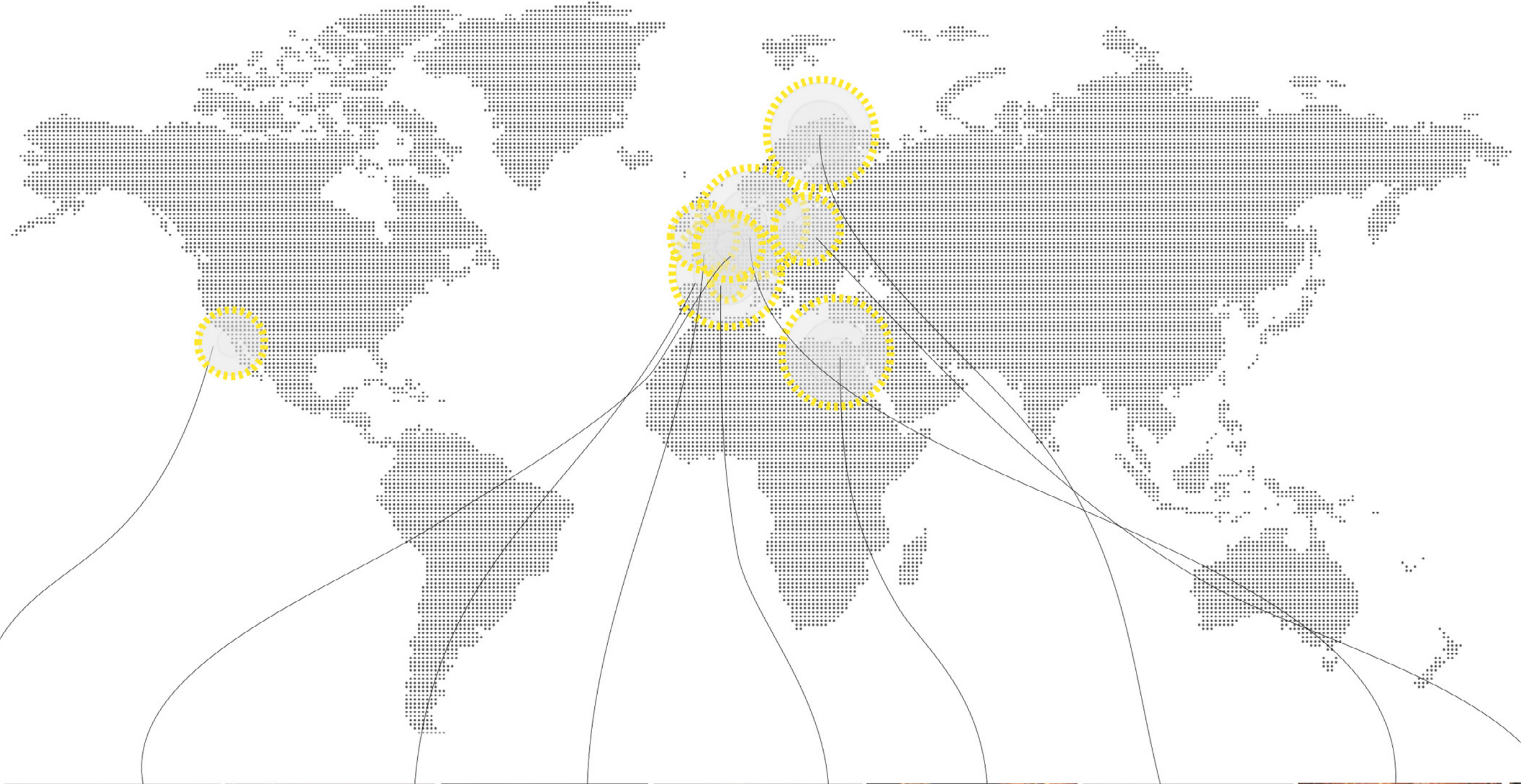
UNSAFETY, **NECKLACE OF LIGHT**, FANTASTIC, AMAZING, **CHAIN OF LIGHT**, SHINY, BEAUTIFUL, MAGIC, SHINING, WAYFINDING

INTIMATE, BEAUTIFUL CONTRALUZ, COOL MOOD, AWESOME SHOT AND LIGHTING, BEAUTIFUL TEXTURE, **LOVE THE DEEP QUALITY OF THE LIGHTS**

LONDON NEVER LOOKED SO GOOD, **WONDERFUL LIGHT, PERFECT ILLUMINATION, LIKE THE TREES FULL OF CRYSTALS, I LIKE THE BLUE LIGHTING**, NICE PERSPECTIVE BEAUTIFUL AND CINEMATIC

BEAUTIFUL LINES AND COLOURS, AWESOME TONING, GOLDEN TONE, MAJESTIC GOLDEN GLOW, INCREDIBLE ATMOSPHERE

EMOTION, BRILLIANT, REFLECTION, **AWASOME**, INCREDIBLE, **WORRING**

STUNNING, **COLOURS, GOLDEN, SWEET, TONES GLOW, CITY, WAYFINDING**

COLOUR, MOOD, **ATMOSPHERE**, LOWLIGHTING, **DRAMATIC, MYSTERIOUS, DARK, SHADOW**, AMAZING, WAYFINDING

BRILLIANT LOW LIGHT, AMAZING ENERGY, SUPERB LIGHTING, FANTASTIC MOOD, **LOVELINESS OF LINES AND LIGHT**

WONDERFUL LIGHTING, ITS LIKE **MAGIC**, BEAUTIFUL **STARRY SKY, TOO MUCH STAR IN THE SIMULATED NIGHT SKY**

Fig. 6 Example of Nocturnal virtual etnography about different perception of the nocturnal image. Atlas of Urban Lighting Experiences 2.0 (2012). Author: Daria Casciani

which is a night bicycle ride through the centre of Milan in order to experience and analyse the urban space and architecture under artificial lights, are both examples where the local inhabitants and tourists are incentivized to discover the

Fig. 7 Light Ride moment of discussion about the relative lighting condition in front of the Duomo di Milano (2015). Authors: Helena Gentili and Giacomo Rossi. Picture by Bernardo Petrucci

city after dark. (See fig.7)

The advantages of storytelling rely in the fact that the impressions and experiences of the participants can be collected and exchanged in an informal way. The proposed night walks wish to raise awareness in the profession of lighting design and demonstrate the importance of artificial lights when discussing the nocturnal character.

The designer involving directly people as advisors

The practice of *Nightly Public Outreach*, employing evaluation techniques developed by the social sciences, is very important for both gathering information about people's perception of the lit environment but also for motivating people to reflect in a more critical and active way about their surrounding environment. *Evaluative questionnaires* (Deleuil, 2009) about the perception of urban lighting can been distributed in order to define a shared, polyphonic and social based lighting project for their city.

Public involvement of the urban community in the dialog

about urban lighting can be wider, through the use of *On-line Public Platforms,* providing the direct possibility to citizens to participate and give their opinion about the urban lighting of their neighbourhood or of their city: examples like *LED Your City* (LED Your City, 2011) and *SEETY Milano* (Seety Milano,2016; Casciani, 2014) show that participants can vote, select or refuse a project or declare their point of view, give direct opinions, ideas, solutions and possible al-

Fig. 8 Results of the on-going research SEETY Milano, on-line public platform for nighttime identity assessment of the city of Milan. Author: Daria Casciani

ternatives. (See fig.8)

The general requirement for these surveys is that the participation would be effectively active and extended and that the platform is reachable, open, understandable and used in a correct way. Even though, these platforms of public outreach are rarely used in real critical decisional projects., on the other hand, they are a useful tool for gathering insights

and impression about the nocturnal territories and for engaging people in a discussion about its renewal through lighting.

The designer help people transforming and renewing actively their nocturnal territory

In limited and temporary occasions, *Urban Lighting Co-creation* occurs when people are directly involved in the practical renewal of their nocturnal territory and become active in the preparation of lighting performance, lighting fixtures and settings (selecting, donating, preparing, creating, and repairing) with the help of lighting designers as in the example of Synoikia Pittaki (Pittaki,2013). Driven by the experience of professionals, people are involved in expressing their belongings, imagination and memory in relation to a space, which is generally a neglected and abandoned territory and, with lighting is renewed and valorised.

Lighting Workshop is another method used to understand people perception and experience of the night-time of the city and, at the same time, make people understand their urban environment. Generally organized by the Social Light Movement, *Guerrilla Lighting* (Guerrilla Lighting, 2016) are conceived as workshop where students and local residents are involved together in temporarily changing the lighting atmosphere of the space by turning and handling portable lighting systems such as torches, lanterns, lamps, etc. for one night. (See fig. 9)

In addition to this, digital technologies today enable the possibility of having changeable nocturnal territories that can be manipulated directly by users, which are able to select (between a range of lighting atmospheres what they want). *Urban Living Labs methodologies* (Living Lab, 2012) conceived as catalyser for innovation and co-creation in cit-

Fig. 9 Before/after Guerrilla Lighting at Castelfield, Manchester UK (2007-2008) Author: BDP Lighting – Photograph © David Barbour/BDP Lighting

ies, can be used for allowing people and industries to test the best innovations, in a process that involves citizens, businesses and public authorities to gather more user-oriented design of nocturnal territories. About this tool, an example is the *Valotarina (Light Stories) Project* (Pihlajaniemi, Österlund, Luusua, & Tanska,2012) which enable city dwellers to decide the atmosphere of the streets at night by writing its digital storytelling, posting online digital recordings or sharing stories, messages or greeting.

5. Conclusions

Lighting has been the medium and the message (Mcluhan, 2008) to build the nocturnal city, but unfortunately this instrument has not been deeply studied yet and its potentials and limits need a more critical approach in order to avoid misinterpretations when it comes to the design of urban spaces. The problems to be solved, when it comes to the urban nocturnal territory, is that of its definition through the identification of its components and relative tangible and intangible lighting aspects which this study has highlighted

and described.

Lighting designers play an important role in discovering and envisioning scenarios that push and disrupt the limits of new technologies in order to answer both users and city needs. Many different competences are converging and an emerging hybrid fields are springing from the integration and cross-fertilization of different disciplines such as interaction design, environmental and perceptual psychology, environmental, product, graphic, service design, sociology, ethnography, computer engineering, ICT system engineering, architecture and landscape planning.

The lighting experience as a whole process and project is connecting those areas in a new trans-discipline interested in exploring and designing actively the way in which lighting impacts human experience and transforms the urban space and vice-versa. The rescue of the value of the design process might be the only solution if we, once more, would like to see our cities as real places and establish a strict dialect between lighting and territory, becoming once again dependent of each other, all perceived and lived under natural and artificial conditions.

The research about the nocturnal territory condition and artificial lighting as a contemporary tool for the recovery of public spaces encounters the idea that lighting has its own language still to be further developed in association with the research for new references in design, if we want to reinterpreted the actual crisis of the public space as a moment to open up a field of new possibilities.

References

- Abbagnano, N. & Fornero, G. (1999). *Protagonisti e testi della filosofia*. Volume A, Tomo 1. Torino: Paravia Bruno Mondadori Editori.
- Amendola, G. (2009). *Il progettista riflessivo*. Laterza, Bari: Scienze sociali e progettazione architettonica.
- Atlas of Urban Lighting Experiences 2.0 (2012) retrieved from http://lightsymposium.de/2012/documents/DARIA_CASCIANI.pdf
- Bell, P.A., Greene, T. C., Fisher, J. D. & Baum, A. (2001). *Environmental Psychology*. Fifth Edition, New York, NY: Psychology Press, Taylor & Francis Group.
- Bilotta, E., Bonaiuto, M., Bonnes, M. (2010). *The ecology of perception of safety in urban environment: Assessing cumulative risk exposure in the city of Rome*. Abstract, 21st IAPS Conference, Leipzig, Germany: Pubbl. In S .Kabisch, A. Kunath, H. Feldmann (Eds.)
- Bordonaro, E. & Aghemo, C. (2006). *An environmental psychology approach to urban lighting*. International Conference Proceedings, The Urban Nightscape 2006 International Conference, Athens, Greece.
- Bordonaro, E. & Aghemo, C. (2007). *Evoluzione del rapporto di luce e città*, from Convegno internazionale "Luce e Architettura", organized by dall'AIDI.
- Brandi, U. & Geissmar-Brandi, C. (2007). *Light for Cities, Lighting Design for Urban Spaces*. A Handbook. Basel, Switzerland: Birkhäuser Publishers for Architecture.
- Canter, D. (1977). *The Psychology of Place*. London, UK: Architectural Press.
- Casciani D. (2014) SEETY Milano: strumenti di partecipazione all'illuminazione urbana. pp.212-214. In La città open source - ISBN: 9788876031014
- Casciani, D. (2014). *Urban social lighting. Exploring the social dimension of urban lighting for more sustainable urban nightscapes*. Doctoral Thesis Unpublished.
- Cullen, G. (1971). *The concise townscape*. London, UK: Architectural Press.
- Deleuil, J.M. (2009). *Eclairer la ville autrement: Innovations et expérimentations en éclairage public Presses polychniques et universitaires romandes*.
- Farrington, D. & Welsh, B. (2002). *Effects of improved street lighting on crime: a systematic review*. Published on Home Office Research, Development and Statistics Directorate, August 2002.
- Gehl, J. (1991). *Vita in città: spazio urbano e relazioni sociali*. Rimini: Maggioli.
- Gentili, H. (2015). *The artifice of Light. Interpretations of the Contemporary Nocturnal Landscape*. Doctoral Thesis Unpublished.
- Guerrilla Lighting (2016, June 02) retrieved from http://www.guerrillalighting.net/
- Harvey, D. (1990). *The Condition of Postmodernity: an enquiry into the origins of cultural change*. Cambridge, Mass & Oxford, UK: Blackwell Publishers.
- Hillier, B. & Hanson, J. (1984). *The Social Logic of Space*. London Cambridge: Cambridge University Press.
- Jenks, C. (1995). Watching your step: the history and practice of the flâneur, in:

C.Jenkss (Ed.) *Visual Culture*, London: Routledge.

- Köhler, D. & Sieber, R. (2011). The time factor in relation to the electric lighting in urban spaces, *PLD magazine* n.79, October 2011.
- Kozinets, Robert V. (2010). *Netnography: The Marketer's Secret Weapon*; White Paper p. 64
- Lambertucci, F. (2001) *Luce: materiale del progetto contemporaneo*, Diagonale: Roma, p.11
- LED Your City (2016, June 02) retrieved from http://www.facebook.com/ledyourcity
- Lefebvre, H. (2004). *Rhythmanalysi: space, time, and everyday life*. Translated by Stuart Elden and Gerald Moore; with an introduction by Stuart Elden. New York, NY: Continuum.
- Light Ride Milano (2015, March 10) retrieved from https://www.youtube.com/watch?v=z7-VWffHDb0
- Living Lab (2012, September 09) retrieved from http://ec.europa.eu/information_society/activities/livinglabs/index_en.htm] and http://www.openlivinglabs.eu/
- Mcluhan, M. (2008). *Gli strumenti del comunicare*, foreword by Peppino Ortoleva; afterword by Paola Pallavicini; translation of Ettore Capriolo. Milano: Il saggiatore.
- Narboni, R. (2004). *Lighting the landscape, Art Design, Technologies*. Basel, Switzerland: Birkhäuser Publishers for Architecture.
- NightSeeing (2016, June 02) retrieved from www.nightseeing.net
- Pallasmaa, J. (2014). *Space, place and Atmosphere. Emotion peripheral perception in architectural experience 230-245*. In: Lebenswelt. Aesthetics and philosophy of experience N° 4.
- Pease, K. (1999.) A review of street lighting evaluations: Crime reduction effects. In: Painter KA, Tilley N, editor(s). *Surveillance of Public Space: CCTV, Street Lighting and Crime Prevention. Crime Prevention Studies*, Vol. 10. Monsey, NY: Criminal Justice Press, 1999, 47-76.
- Pihlajaniemi, H., Österlund, T., Luusua, A. & Tanska, T. (2012). *LightStories: Designing and Evaluating Interactive and Participatory Urban Lighting*. Interactive Design Light Workshop Glasgow, June 2012.
- Pittaki, S. (2016, June 02) retrieved from https://vimeo.com/60154783
- Raynham, P. & Gardner, C. (2001). *Urban Lights: Sustainable Urban Lighting for Town Centre Regeneration*. Reykjavik: Lux Europa 2001.
- Raynham, P. (2007). *Public Lighting in Cities. International Conference Illuminat 2007*. Romania: Cluj-Napoca.
- Seety Milano (2016, June 02) retrieved from http://seety.altervista.org/
- Schivelbusch, W. (1995). *Disenchanted night: the industrialization of light in the nineteenth century*, translated from the German by Angela Davies, Berkeley: The University of California press
- Tillet, L. (2006). *A social approach to urban lighting*. International Conference

118

Proceedings, The Urban Nightscape 2006 International Conference, Athens, Greece.

- Tillet, L. (2011). *Grounding Practice: Speculations on Affect and Environment.* PLDC Conference Madrid, October 2011.
- Vogels, I. (2008). *Atmosphere Metrics: a tool to quantify perceived atmosphere.* Philips Research Europe: High Tech Campus.
- Welsh, B. & Farrington, D. (2008). *Effects of Improved Street Lighting on Crime.* Campbell Systematic Reviews 2008:13 DOI: 10.407 3/csr.2008.13
- Whyte, W.H. (1980). *The social life of small urban spaces.* Washington, DC: Conservation Foundation.
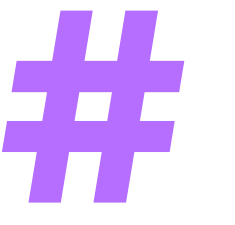
BIOGRAPHIES

Ana Margarita Ávila Ochoa

MHAU, researcher and professor of design at Facultad del Hábitat, Universidad Autónoma de San Luis Potosí, México. With prof. J.L. González Cabrero, she is developing design research approaches in the Industrial design program with the main objective to understand design processes and enable design education through meaningful methodologies and innovation.

amavilao@hotmail.com

Miriam Bicocca

PhD in Production Systems & Industrial Design, research fellow at Department of Architecture and Design (DAD) of Politecnico di Torino. Graduated in Eco-design, her research is aimed to promote sustainable growth and rural development through the application of systemic design approach in the marginal areas. From 2013 she is editor of the online magazine Graphicus.

miriam.bicocca@polito.it

Letizia Bollini

MS in Architecture, PhD in Industrial Design and Multimedia Communication, specialist in Digital Media Design at the San Francisco State University, certificated in Mobile App Visual Design from the Norman&Nielsen Group-London. Theorist, designer and educator her research interests are focused mainly on multimodal user interfaces and interaction, digital media, visual design, spatial representation and cultural heritage. She is currently assistant Professor at the Department of Psychology at the University of Milano-Bicocca.

letizia.bollini@unimib.it

Marco Borsotti

Architect, PhD in Interior Architecture and Exhibition Design. He is an assistant professor at the Department of Architecture and Urban Studies of Politecnico di Milano, and member of AIMAC (Interior Architecture, Museums, Built Environment), a permanent research group. He takes part in several research activities and international conferences on the topic of exhibition, contemporary living and contemporary sacred architecture.

marco.borsotti@polimi.it

Anna Calvera

Graduated in graphic design, PhD in Aesthetic, she is full professor of History and Theories of design at UB, the University of Barcelona. She has been teaching in BA, MA and PhD level and currently she is also a teacher at 3d Tunis Master. She is member of ICDHS, EAD and GRACMON, the Research Group of UB which deals with the history of art and contemporary design.

annacalvera@ub.edu

Daria Casciani

PhD, lighting specialist, product designer, research fellow. She currently works at the Department of Design, Politecnico di Milano, by teaching at the Master in Lighting Design & LED Technology and conducting research activities at the Laboratorio Luce.

daria.casciani@polimi.it

Annalinda De Rosa
PhD candidate at the Politecnico di Milano, lecturer for the Department of Design. Her researches deal with mutual influences between design for services and public/urban spaces. She is involved in the European consortium GIDE (Group for International Design Education), and in the projects: Human Cities, Challenging the city scale and campUs - Incubation and settings for social practices.
annalinda.derosa@polimi.it

Raffaella Fagnoni
Associate professor of design at the Polytechnic School and DSA (Dipartimento di Scienze per l'Architettura) of the Università degli Studi di Genova. Her research deal with design capabilities for the re-development of territories in transformation, addressing health, safety and sustainability issues. She collaborates with the Municipality of Genoa and currently is participating at Urbact Network, 2nd Chance, action for a sustainable urban development.
fagnoni@arch.unige.it

Davide Fassi
Associate professor at the Politecnico di Milano and the Tongji University (China), member of the international committee of DESIS Network (Design for Social innovation and Sustainability). His research focuses on community centred design. He published "Temporary Urban Solutions" (2012) and developed "Coltivando. The Convivial Garden at the Politecnico di Milano" (2012).
davide.fassi@polimi.it

Luca Fois
Creative advisor and lecturer of Event Design at the Design School of Politecnico di Milano. Currently he is consultant for Cilab, Creative Industries Lab Network, at the Politecnico di Milano.
lucafois49@gmail.com

Rossana Gaddi
Graduate in Industrial Design, PhD in Design and Technology for the Enhancement of Cultural Heritage. She has been a visual communication designer since 2003. Currently she works at the Design Department of the Politecnico di Milano, where is involved in researches and teaching activities on the communication and the enhancement of the relationship between design, fashion and territory.
rossana.gaddi@polimi.it

Laura Galluzzo
PhD in Design, research fellow at Design Department of the Politecnico di Milano, lecturer at the Design School. In recent years she designed interiors and services for the Expo Village at Expo Milan 2015, and she was the project manager of the last Cumulus Conference in Milan (June 2015). Currently she is working for campUS, a Polisocial research project, and for Human Cities, a European research project.
laura.galluzzo@polimi.it

Helena Gentili
Architect, PhD in architecture and urbanism, lighting designer (professional member APIL). Currently she collaborates as a teacher and tutor at the Master in Lighting Design & Led Technology, Politecnico di Milano. Her independent experience in the field of lighting design involves the private and the public sector.
helena.gentili@polimi.it

Debora Giorgi
Architect, PhD in History of Afro-Asian Countries, and associate researcher of design at the Department of Architecture of the University of Florence. Since 1994, her research has been dealing with cultural heritage and durable development of Mediterranean countries. She has been coordinating a number of international projects. Currently she teaches Tangible and Intangible Heritage and Strategic Design Stratégique at Master 3D, Tunis.
deboragiorgi@gmail.com

José Luis González Cabrero
MDP, researcher and professor of design at Facultad del Hábitat, Universidad Autónoma de San Luis Potosí, México. He is developing design research approaches in the Industrial design program, with the main objective to understand design processes and enable design education through meaningful methodologies and innovation.
gonzalezcabrero@gmail.com

Yosser Halloul
PhD student of Sciences and Technics of Arts. She teaches Ceramic, Technics of Graphic Representation and Histoiry of Art at the Institut Supérieur de Beaux Arts de Sousse (ISBAS). She is a member of education at Master 3D Tempus, where she teaches Socio-Anthropology and Aesthetic.
yosserhalloul@yahoo.fr

Insaf Khaled
Semiotician and historian of art and design, she teaches these subjects as well as Interior Design at the Higher School of Science and Technology of Design (ESSTED) of the University of Manouba, in Tunis. Currently she teaches also at the Master 3D. She is specialized in Tunisian craft traditions with an approach related to the project of architecture, home and decorative motifs.
insaf.khaled@yahoo.fr

Reham Mohsen
PhD in Sign Design, graduate in Applied Art & Design at the Helwan University in Cairo. Since 2012 she has been an associate professor at the Faculty of Applied Arts in Helwan University in Cairo (Department of Decoration). She also taught Visual Communication at the German University in Cairo, and published several papers about art & design perception, visual communication, decorative arts and murals, calligraphy and typography.
dr.reham.mohsen@gmail.com

310

Marina Parente

Architect, PhD, associate professor at the Design Department of the Politecnico di Milano and Coordinator of D4T- Design for Territories Research Network. She is engaged in strategic design for the enhancement of territorial and cultural heritage, with research, teaching and planning activities. She is the director of the high education course "Brand of Territorial Systems" and the coordinator of the Master in Planning Culture in Milan.

marina.parente@polimi.it

Silvia Pericu

Assistant professor of design at the Polytechnic School and DSA (Dipartimento di Scienze per l'Architettura) of the Università degli Studi di Genova. Currently she is cooperating with the Municipality of Genoa and participating at Urbact Network, 2nd Chance, action for a sustainable urban development.

pericu@arch.unige.it

Sonia Pistidda

Architect, PhD in Architecture, Urban Design, Conservation of Housing and Landscape, and research fellow at the Department of Architecture and Urban Studies of the Politecnico di Milano. She is involved in teaching, professional and research activities in the field of preservation, protection and enhancement of cultural heritage, participating in important cultural activities and international projects.

sonia.pistidda@polimi.it

Rosa Povedano

Anthropologist, graduated at the University of Tarragona, Beaux Arts M.S. at the University of Barcelona (specialisation in design). She teaches design at UB where is in charge of the Experimental Atelier of design (tissue and product) ant the coordinator of BA last years degree courses. She is a member of GRACMON UB. Currently she teaches Anthropology of every day life objets in the Experimental Fabric Atelier at Master 3D, Tunis.

21dits@gmail.com

Maria Antonietta Sbordone

Architect, M.S. at the Ecole Polytechnique Fédérale de Lausanne (EPFL), designer and researcher in Industrial and Fashion Design at DICDEA Department of the Second University of the Studies of Naples (SUN). She teaches Industrial Design in the Master Degree Course Design for Innovation at the SUN. She is a visiting Professor at the Nanjing University of Science and Technology (China).

mariaantonietta.sbordone@unina2.it

Carla Sedini

Sociologist, PhD, photografer. Since 2011 she has been working as a researcher and lecturer at the Design Department of the Politecnico di Milano, where she is currently research assistant for D4T – Design for Territories Research Network.

sedini.carla@gmail.com

Andreas Sicklinger
Graduate in architecture at the Technical University in Munich, for 20 years he has been working in different design schools in Italy, Politecnico di Torino, Università di Ferrara and IED in Milan), in the field of Product Design and Applied Ergonomics for Design. Since 2012, he has been head of the Product Design Department at the Faculty of Applied Sciences and Arts of the German University in Cairo, Egypt.
sicklingerandreas@gmail.com