



GREEN BUILDING
PROFESSIONAL
Year-Round Education Program

LIGHTING

Dorin BEU

2023

What is the difference between green buildings
and energy efficient buildings?



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Green building design program by University of British Columbia 2020

1st Stage: Program Planning and Site Selection

- 1.1 Set preliminary environmental performance targets (owner)
- 1.2 Research funding opportunities
- 1.3 Reuse existing buildings
- 1.4 Start early to source salvaged materials
- 1.5 Select appropriate land







Green building design program by University of British Columbia 2020

2nd Stage: Selection of Design Team

- 2.1 Select a design team with experience or interest in green and integrated design
- 2.2 Select appropriate professionals for the expanded design team
- 2.3 Set environmental performance targets (design team)



Green building design program by University of British Columbia 2020

3rd Stage: Site Design

- 3.1 Protect or enhance site's ecological integrity and biodiversity
- 3.2 Reduce or eliminate disturbance to water system
- 3.3 Prevent or reduce the use of potable water for irrigation
- 3.4 Reduce urban heat islands
- 3.5 Design infrastructure to support alternative transportation



Green building design program by University of British Columbia 2020

4th Stage: Building Orientation & Configuration

- 4.1 Use site resources to reduce building loads and enhance indoor environmental quality
- 4.2 Develop a project specific building form and massing
- 4.3 Configure internal layout to reduce loads and enhance IEQ
- 4.4 Select best concept design
- 4.5 Finalize all non-energy performance targets



Green building design program by University of British Columbia 2020

5th Stage: Building Systems Design

5.1 Energy Design

5.2 Structure Design

5.3 Envelope Design

5.4 Ventilation Design

5.5 Water Systems Design

5.6 Lighting Design

5.7 Mechanical Design

5.8 Finalize building systems design



Green building design program by University of British Columbia 2020

6th Stage: Interior Finishes and Appliances

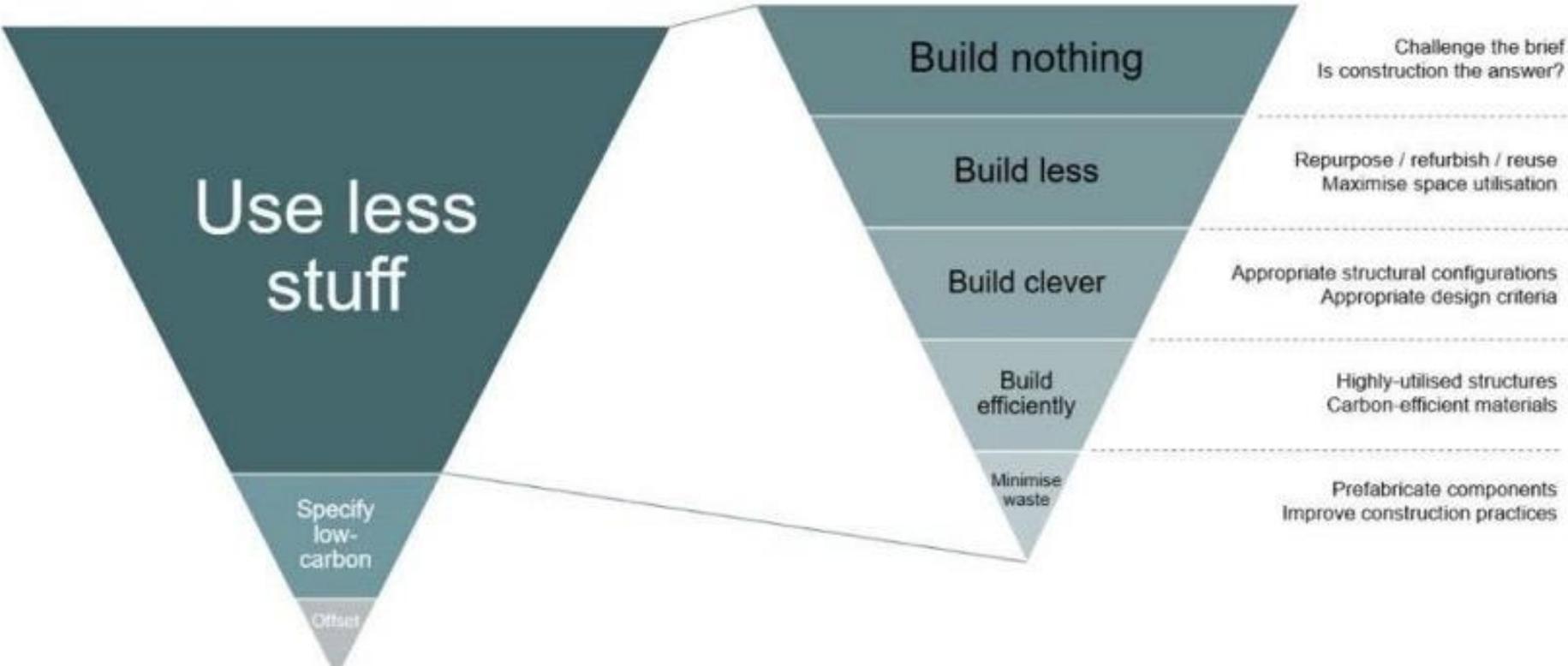
6.1 Reduce internal loads

6.2 Reduce disposal of waste materials to
landfills

6.3 Ensure indoor air is free of pollution



The key to green building is using less stuff



Pleading for Lighting

Dorin BEU
former RoGBC president

On-line



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Street billboard: neutral colour, 40 W, 3200 lm, LED, 18 EUR
Is it a good luminaire?



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Colour rendering?
Luminous efficacy: 80 lm/W
Power factor?
Life expectancy?
Glare (UGR)?



HOFF

Panou LED slim 40 W

- 60 x 60 cm • lumină neutră
- flux luminos: 3200 lumeni
- 3 tipuri de montaj: încastrat, aparent, suspendat*

89 lei

...montaj suspendat se achiziționează separat.

...truirea unei lumi mai sigure. Lumea noastră de acasă.

www.dedeman.ro

AMPRENTA 031 421 142

The advertisement features a large, rectangular LED panel mounted on a wall. To the right of the panel, there is a list of specifications and a price tag. Below the price tag, there is a silhouette of a person sitting in a chair reading a book, with a floor lamp next to them. The background of the advertisement is white with blue and orange accents.



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I haven't worked a single day, it was pure pleasure

Thomas Alva Edison



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L'architecture est un mélange de nostalgie et d'anticipation extrême

Jean Baudrillard

Quote used by Jean Nouvel for
monumental gates Sarlat-France



Nostalgia



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Nostalgia



Democratization of artificial light in
the Roman Empire

The price of a lamp - one as (as a
measure for ordinary wine or a
pound (500 g) of bread
Robert Etienne - Daily Life in
Pompeii

Tunisia lamps were found in RO
and BG (free movement of goods
and services)

Nostalgia



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Nostalgia



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Extreme anticipation

Poul Henningsen PH - Artichaut 1958



Extreme anticipation

Birdie



Ingo Maurer - Porca Miseria



Anticipare extremă

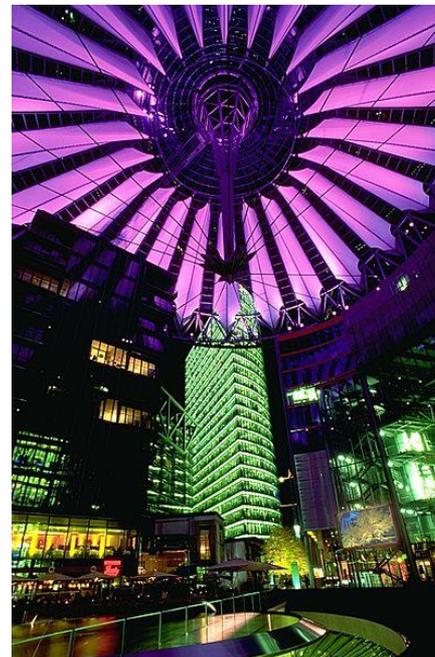
Studio Drift - Dandelion



Yann Kersale – concepteur éclairage



Yann worked with many architects such as Jean Nouvel
(Opera Lyon, Musee de Quai Branly) și Helmuth Jahn





Daan Roosegaarde



Roger Narboni – practice and theory

Roger wrote the following books:

1. [Les éclairages des villes](#)

Vers un urbanisme nocturne, 2012

2. [Lumières et ambiances](#)

Concevoir des éclairages pour l'architecture et la ville,
2006

3. [La lumière et le paysage](#)

Créer des paysages nocturnes, 2003

Creatorul conceptului de Lighting Master Plan



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Acolytes

Order acolytes, which dates from the early Church, was established to take care of Church's luminaires (1886 Corblet of LVMEN EST OMEN, art, history and spirituality of artificial lighting Chrzanovski Laurent 2013)



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CIE ?

CIE = Commission Internationale de l'Eclairage

A 100 years

It deals with the exchange of information and standardization of lighting

37 National Committees



LIGHTING Specialist - A NEW COMPETENCE

Occupation of lighting specialist= certified and formalized



GUVERNUL ROMÂNIEI
MINISTERUL MUNCII, FAMILIEI, PROTECȚIEI SOCIALE ȘI
PERSOANELOR VÂRSTNICE
DIRECȚIA OCUPARE

NR. 14446/RG/459/DO/13.05.2013

Comitetul Național Român de Iluminat
Domnului conf. Dr. Ing. Dorin Beu, Președinte,

Referitor: Clasificarea Ocupațiilor din România

Stimate domnule președinte,

Referitor la adresa dumneavoastră nr.14 din 22.04.2013, transmisă Ministerului Muncii, Familiei, Protecției Sociale și Persoanelor Vârstnice și înregistrată la Direcția Ocupare cu nr. 459 în data de 29.04.2013, prin care ne solicitați actualizarea Clasificării Ocupațiilor din România, prin introducerea ocupației „*specialist în iluminat*”, vă comunicăm avizul nostru favorabil.

Precizăm că ocupația *specialist în iluminat* va avea codul **214237** și va fi introdusă în cadrul Grăpii de bază 2142 *Ingineri constructori*.

Plană la publicarea în Monitorul Oficial, a ocupației pentru care Ministerul Muncii, Familiei, Protecției Sociale și Persoanelor Vârstnice și-a dat acordul de includere în Clasificarea Ocupațiilor din România, codul respectiv poate fi folosit cu titlu provizoriu. Modificările operate vor fi incluse în următorul Ordin comun al ministrului muncii, familiei, protecției sociale și persoanelor vârstnice și al președintelui Institutului Național de Statistică, care va fi publicat în Monitorul Oficial, Partea I.

Cu deosebită considerație,

DIRECTOR,

Tania GRIGORE



Introduced in Classification of Occupations
in ROMANIA (COR). (code 214
237 2142Basic Group - Civil Engineers)

Making occupational standard for
determining competency levels.



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Pleading for lighting

Pleading for dark sky
Impact on Green Buildings
LED - light control



Pleading for dark

Importance day / night cycle

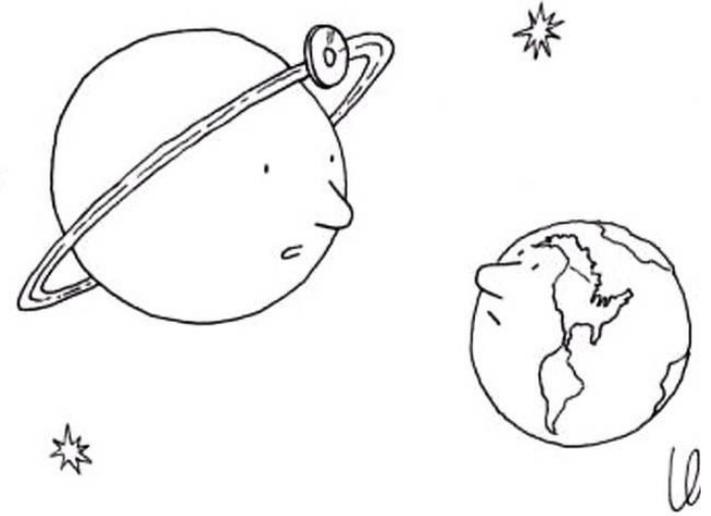
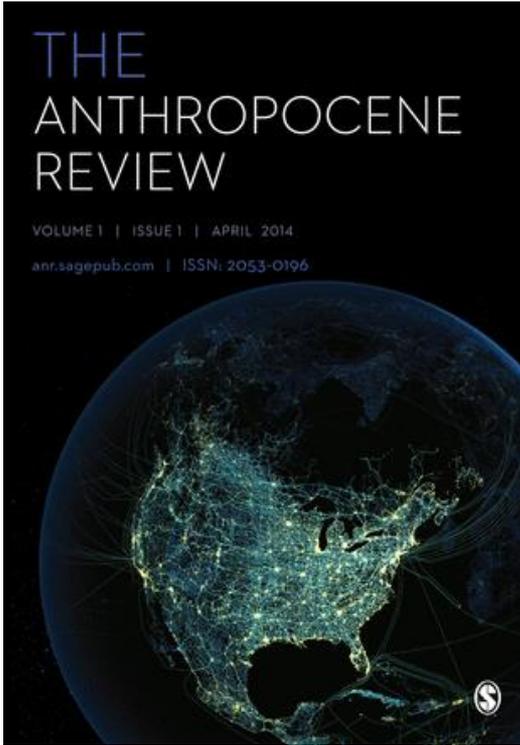


Pleading for dark

Avoiding light pollution



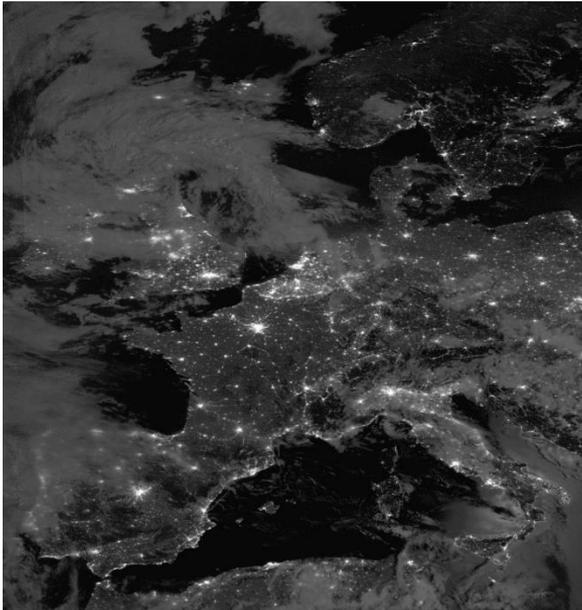
Anthropocen – Human period



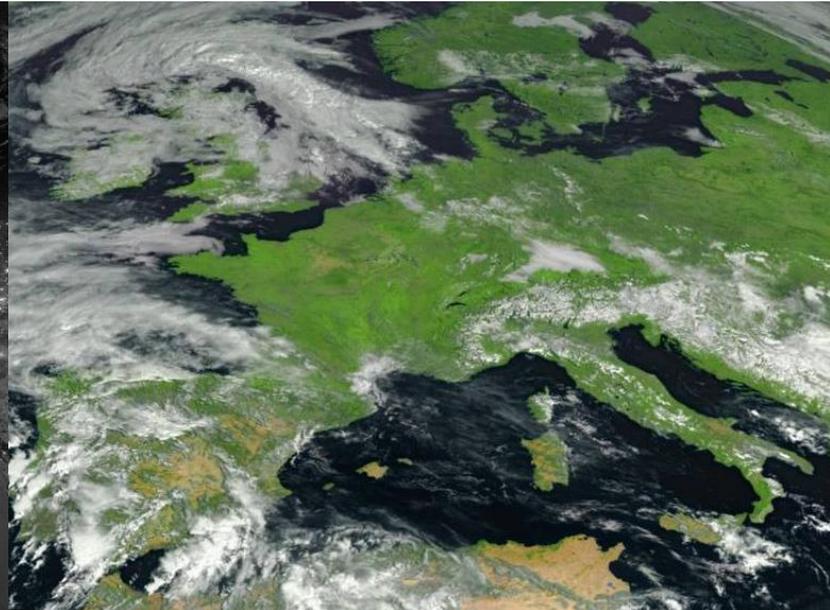
"I'm afraid you have humans."

**Light Pollution – the only pollution that can
be seen from satellite**

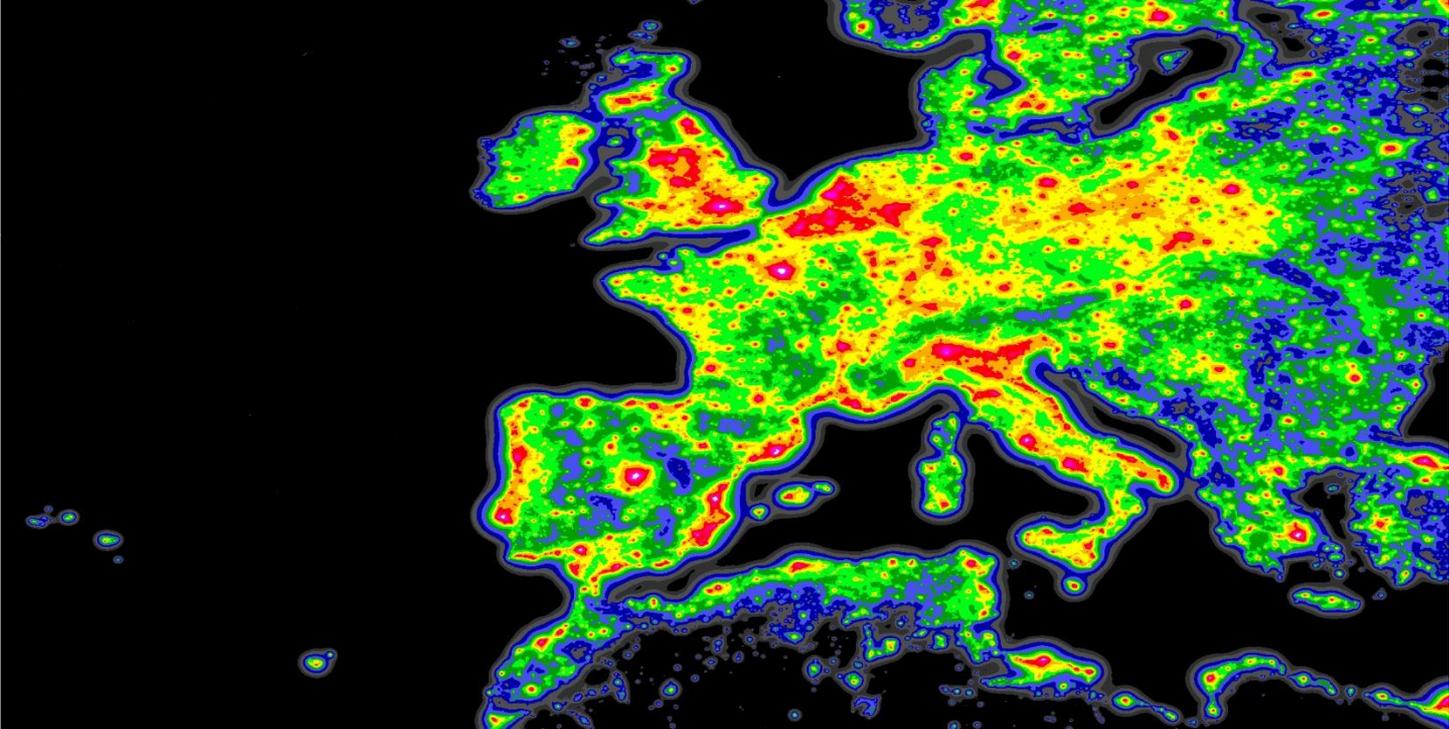
Electric light use during night is the most obvious change from sky



September 16, 2014 ~1am



September 16, 2014 ~10am



Historical changes



150 years ago

- Human rhythm based on the natural light
- Working outside
- Siesta
- Renewable energy

The city that never sleeps

- 24 hour rhythm
- use of only the built environment
- Low lighting level
- Blue light!



Balance restored

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Lethal effects of short-wavelength visible light on insects

Masatoshi Hori, Kazuki Shibuya, Mitsunari Sato & Yoshino Saito

[Affiliations](#) | [Contributions](#) | [Corresponding author](#)

Scientific Reports **4**, Article number: 7383 | doi:10.1038/srep07383

Received 01 August 2014 | Accepted 19 November 2014 | Published 09 December 2014

[PDF](#)[Citation](#)[Reprints](#)[Rights & permissions](#)[Article metrics](#)

We investigated the lethal effects of visible light on insects by using light-emitting diodes (LEDs). The toxic effects of ultraviolet (UV) light, particularly shortwave (i.e., UVB and UVC) light, on organisms are well known. However, the effects of irradiation with visible light remain unclear, although shorter wavelengths are known to be more lethal. Irradiation with visible light is not thought to cause mortality in complex animals including insects. Here, however, we found that irradiation with short-wavelength visible (blue) light killed eggs, larvae, pupae, and adults of *Drosophila melanogaster*. Blue light was also lethal to mosquitoes and flour beetles, but the effective wavelength at which mortality occurred

[Science jobs](#)[Science events](#)

nature events directory

[Translational Bioinformatics Workshop](#)

19 January 2015 — 23 January 2015

Floor 16, Tower Wing, Guy's Hospital, London SE9RT, United Kingdom

[The 5th Annual Traumatic Brain Injury Conference](#)

15 April 2015 — 16 April 2015

10 Thomas Circle N.W., Washington, DC 20005 USA, United States

[Genomic Medicine for Clinicians](#)

28 January 2015 — 30 January 2015

Cambridge, United Kingdom

[Post a free event](#) | [More science events](#)

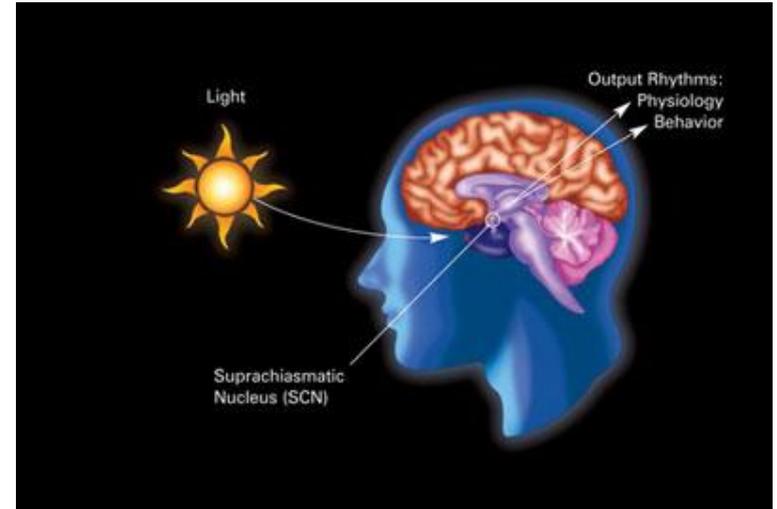
[Discover more](#)[Most read](#)

[Damage of photoreceptor-derived cells in culture induced by light emitting diode-derived blue light](#)

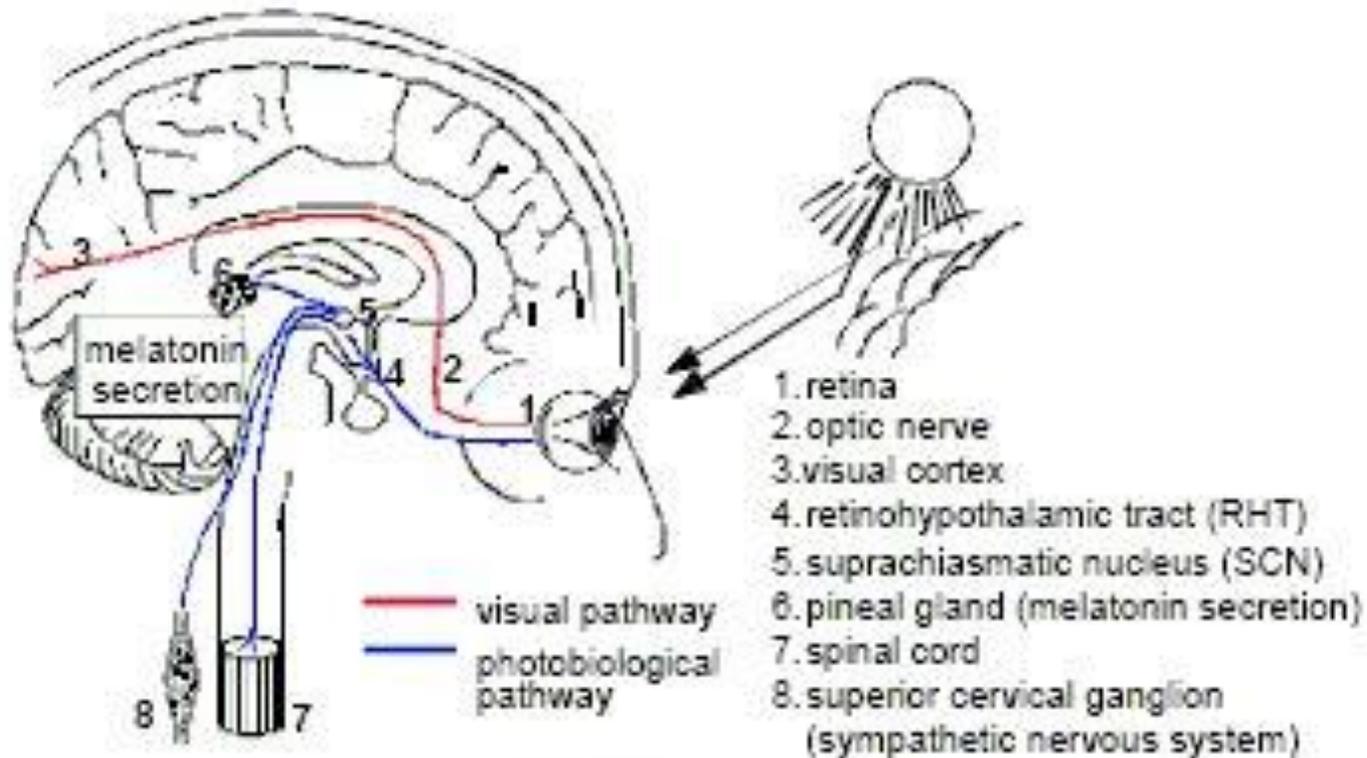


Circadian photobiology

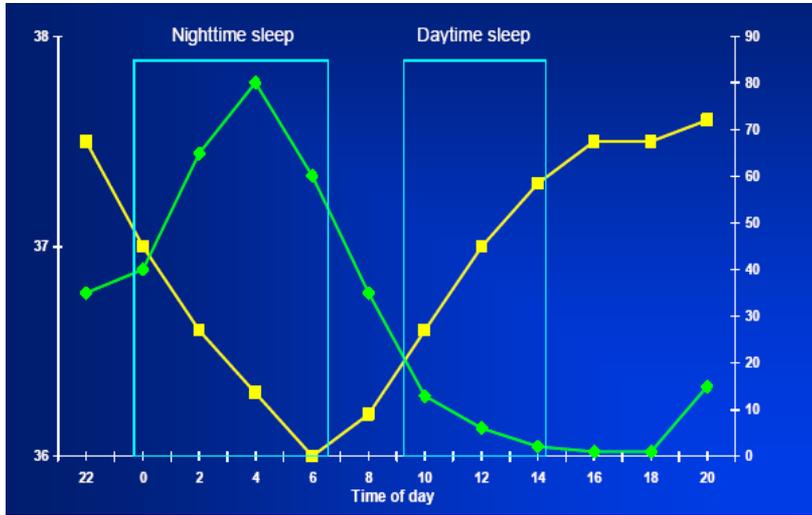
- S Light signals are received by the photosensors from the retina (others than those from the cones and rods) which send signals to the suprachiasmatic nucleus (SCN) via retino-hypothalamic tract (RHT) and towards pineal glands via sympathetic nervous system.
- S The main hormone responsible for the circadian rhythm is melatonin.



Circadian photobiology



Melatonin



Melatonin level

- S Stays high during the night when we sleep
- S Comes down in the morning when we wake up
- S Opposite to body's temperature

Schematic representation of the level of melatonin secretion, body's temperature during the night and the afternoon sleep.

Reinventing a city through light Sibiu 2015



Sibiu- Proposal of Sarah Ambrozie for LVMEN!



Influence of lighting on green buildings - 28 points

LEED Certificate – total of 110 points (40-49 certified LEED buildings, 50-59 Silver LEED, 60-79 Gold LEED, 80-110 Platinum LEED)

1. *Sustainable sites*
2. *Energy and atmosphere*
3. *Materials and resources*
4. *Indoor comfort and quality*
5. *Innovation and design process*
6. *Product transparency*

- *LCA life cycle assessment*
- *EPD environmental product declaration*



Influența iluminatului asupra certificării clădirilor verzi – 28 puncte

Certificare LEED – total 110 puncte (40-49 clădire certificată LEED, 50-59 Silver LEED, 60-79 Gold LEED, 80-110 Platinum LEED)

1. *Sustainable sites*
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LCA life cycle assessment

EPD environmental product declaration

HEALTH

Light and restorative buildings

Lighting waste collecting



HEALTH

Plants in kitchen– Bosch SmartGrow



WWW.ARTIFICIALLIGHTATNIGHT.ORG

The image shows a screenshot of a web browser displaying the homepage for the ALAN 2016 conference. The browser's address bar shows the URL www.artificiallightatnight.org. The website has a dark blue header with a yellow navigation bar. The navigation bar contains the following links: [HOME](#), [THEME AND TOPICS](#), [LOCATION-ALAN 2016](#), [TO SUBMIT AN ABSTRACT- ALAN 2016](#), and [MORE...](#). The main content area features a large, dark image of a city at night with lights reflecting on buildings and streets. Overlaid on this image is the text: **ALAN 2016**, **4TH INTERNATIONAL CONFERENCE ON ARTIFICIAL LIGHT AT NIGHT**, and **SEPTEMBER 26-28, 2016** followed by **CLUJ, NAPOCA, ROMANIA**. At the bottom center of the image, there is a yellow button with the word "ENTER" and a white downward-pointing arrow.