Lighting design in hospital wards
Design parameters for a pleasurable light atmosphere
- Presentation

- Hospitals in Denmark

- Design parameters for a pleasurable light atmosphere in hospital environments
  - User
  - Environment
  - Light
  - Time
  - Atmosphere

- Future plans and documentation
Lone Stidsen

Phd Student, AaU, Dep. Civil Engineering 09-??
Research assistent, DSKD 08
Designer,LOSTDESIGN 06-??
Educated textile designer, DSKD 01-06
Educated teacher, Silkeborg Seminarium 95-99

LYSNeT, RUC, 13.th of jan 2010. - Lone Stidsen, Aalborg Universitet, Department of Civil Engineering, ls@civil.aau.dk
Danish Hospitals

“Aesthetics and the physical environment affects the human body, mind and wellbeing. Patients, relatives and staff are affected directly and indirectly by the surroundings.”

“The interior should be designed with attention to existing knowledge and experience on how light, art, colors, and outdoor and green areas affects patient health and wellbeing.”


neers, vol. 4, pp. 16.


spital design", Optics & Laser Technology (343-365), , no. 38, pp. 343-365.

Domestic and attractive Lighting

paragraph 2: General requirements for lighting.

For the remaining lighting, the colour temperature must be selected according to patient needs for an attractive “domestic” lighting, which in most cases is color temperature no higher than 3000 K and a reasonably good color rendering of Ra > 80th.

Danish Standard 703
Light atmosphere

- **Light**
  - Light characteristics:
    - Daylight - Artificial
    - Variation, dynamic, intensity, colour
  - Effect
    - Functional
    - Aesthetic
    - Symbolic
  - Light information:
    - Expectations
    - Experience

- **Environment**
  - Location
    - Angle
    - Distance
    - Geographic
  - Spatial composition
    - Object and placements

- **Time**
  - On the time
    - Day and year
  - Period of influence
    - Adaptation
    - Before, under, after

- **User**
  - Behaviour
    - Social, locomotion
  - Human performance
    - Expectations and goals
  - Group characteristics
    - Patients
    - Staff
    - Visitors

- **To see**
  - Visual system
  - Circadian system
  - Perceptual

**Light atmosphere**
- Sensory indications
- Appearance
- Surface character

LYSNet, RUC, 13.th of Jan 2010. - Lone Stidsen, Aalborg Universitet, Department of Civil Engineering, ls@civil.aau.dk
- The functional effect
- The aesthetic effect
- The symbolic effect

Boyce, PR. 2003, "Human factors in lighting"
"Contact with the outside"
Wetton, E. (1986) "Daylight and windows in hospital wards"
Dalke, 2006 presents a guideline for colour and lighting design in hospitals environments.

According to James Turrell (1992) our brain will seek order and meaning and it begins to interpret and sort things out, and seek for meaning if there is no accordance between our ideas and expectations of the light. James Turrell (1999) “The other Horizon”
Environment: composition - spatial structure - surface

Figuren herover viser situationen når det er vinter på den nordlige halvkugle. Sydpolen er belyst både dag og nat, mens nordpolen ligger i konstant mørke. Jo længere nordpå man er, jo mere af døgnet er nat. Rotationen om aksen er mod uret når globen betragtes over nordpolen. Det vil sige at det landområde som herover ligger ved "DAG" bevæger sig mod højre ind i "NAT".


De cirkler som er spændt rundt om Jorden parallelt med ækvator kaldes for breddeparalleller. De er nummererede så de nord for ækvator kaldes 1°N, 2°N,.., 89°N og syd for 1°S, 2°S,.., 89°S.
Time
User: Patients-Staff-Visitors
The physical environment, the organizational structure, and the organizational culture can influence affect. Lighting is clearly part of the physical environment and lighting conditions such as the illuminance and the correlated colour temperature of the lighting have been shown to change mood and to change behaviour in a way consistent with positive affect.
User: Visual-Circadian-Perceptional system
Atmospheres is defined as "spheres of presence". Atmosphere is the manner in which we experience a space. They are not bound to a place but nonetheless poured out into, thus shaping, the space. 

Gernot Böhme
Atmospheres can not be seen - It must be experienced through other senses and an atmosphere occurs rarely through one sense alone, but in an interaction between several senses. Atmosphere affects people emotionally.

Niels Albertsen “Urban Atmosphere”
Atmosphere is not a question of moral. Atmosphere is everywhere and always present.
Atmosphere is not a question of moral. Atmosphere is everywhere and always present.
Atmosphere is not a question of moral. Atmosphere is everywhere and always present.
Gernot Böhme (1937), Philosopher, Atmosphere. Introduces in 1995 the new concept of atmosphere and a relation between body and environment.

Atmosphere
Gernot Böhme display 3 kinds of space:

**The space as medium of presentation**
Mathematic, objective analyse of the space separated from the subject.

**The bodily presens in space.**
Mathematic, subjective analyse of the space: The experience of “being here” and “being present”.

**The bodyspace**
The subject in the center of the space. Based on the way the subject is involved in space “space of action”, “the space of mood” and “the space of sensing”
Sensing

LYSNeT, RUC, 13.th of jan 2010. - Lone Stidsen, Aalborg Universitet, Department of Civil Engineering, ls@civil.aau.dk
Sensing

LYSNeT, RUC, 13.th of jan 2010. - Lone Stidsen, Aalborg Universitet, Department of Civil Engineering, ls@civil.aau.dk
Peter Dalsgaard og Karen-Johanne Kortbak (University of Aarhus) introduce a social parameter and technologi to the concept of atmosphere in the context of design.

In addition, they point out that the concept of time is an essential factor because atmospheres must be seen as a processual phenomenon.
Adding the parameters Time and socio-cultural value as essential factors in understanding the concept of atmosphere.
Atmosphere environmental analyse

- Functions
- Functional ecstasy
- Between people
- sensing
- Relation between objects
- Light supporting both public and privat atmosphere at the hospital ward:

- The patients oppertunity to actively transform the room atmosphere through intelligent lighting controle systems
Research through design
- Researching: Atmosphere, User, Light, Environment, Time
- Developing concept for lighting design at hospital wards.
- Testing the concept at Odense University Hospital

Publications:
- Conference proceeding: Lighting Qualities in Wards: Design Parameters for a Pleasurable Light Atmosphere.
- Poster: Lighting Quality in Wards.

http://vbn.aau.dk/research/(19079507)

Plans and documentation