CHANGING TOWARDS DAYLIGHT’S CHANGEABILITY

THIS PRESENTATION WILL DISCUSS HOW THE VARIATIONS OF DAYLIGHT CAN BE ACCENTUATED IN MODERN OFFICE BUILDINGS BY PROPOSING NEW STRATEGIES FOR CONTROLLING ELECTRICAL LIGHTING

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As Luis Kahn said: “Of the elements of a room the window is the most marvellous. The great American poet, Wallace Stevens, prodded the architect, “what slice of the sun does your building have?”... what slice of the sun enters your room? What range of moods does the light offer from morning to night, from day to day, from season to season and all through the years?”

DAYLIGHT’S CHANGEABILITY
THE ESSENTIAL QUALITY OF DAYLIGHT
QUALITIES OF NORDIC SUNLIGHT & DAYLIGHT
GOLDEN HOUR, LOW SUN-ANGLES, LONG TWILIGHT HOURS & CHANGABILITY THROUGHOUT DAY AND SEASONS
THE POETIC POLYCHROMATIC GLOW OF TWILIGHT, WHICH ONCE WAS FORMERLY OBSERVED AS A MOMENT OF CONTEMPLATION IN THE NORDIC

At the countryside, it was common to keep skumringstime [the hour of twilight]. People gathered indoor and sat quietly without turning the lights on while it was getting dark. There, stories were told, songs were sung – and people listened.

The Royal Danish Library

Celebrating [the hour of] twilight or crepuscular [hours] is a popular tradition that has been maintained for centuries in the Nordic countries. Perhaps the hours of the day and the year is perceived different by people living in the Nordic. At equator, darkness is poured out over the day light a bucket of black paint, while the transition between day and night here with us enchants and transforms nature and people... At dusk you don’t have to do anything. It is the time of the day when the soul seeks nourishment in deep hiding-places and where the brain’s electrical activities are dimmed.

It may feel nice (Det må godt føles rart) by Terje Nordberg

SOURCE: GERMÁN MARQUÉS

SWECO
DAYLIGHT RESPONSIVE DIMMING SYSTEMS
NEEDED AT DAYTIME, BUT TOO MUCH GENERAL CEILING LIGHTING AT TWILIGHT AND EVENINGS

Sweco Denmark HQ around the twilight-hour

Standard daylight responsive dimming system at daytime

Electrical lighting according to lighting standards at night

Proposal for a new twilight – and evening lighting control scenario
A NIGHT-TIME SCENARIO FOR OFFICE LIGHTING
‘FAÇADE LIGHTING’ BY DIMMED INTERNAL LIGHTING + VIEW FROM OUTSIDE AND FROM INSIDE

NOVO NORDISK VTC, COPENHAGEN. IMAGE©SØREN AAGAARD

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RICHARD KELLY’S THREE TENETS OF LIGHTING DESIGN
USED AS THE POINT OF DEPARTURE FOR A MORE SUSTAINABLE STRATEGY FOR CONTROLLING ELECTRICAL LIGHTING

Richard Kelly’s theoretical statements on lighting design:

- **Focal Glow** (... draws attention, pulls together diverse parts, separates the important from the unimportant, helps people see...)
- **Ambient luminescence** (... is the background lighting that serves to perceive the environment in general)
- **Play of brilliants** (light as information, which can be dynamic or colorful... excites the optic nerves, and in turn stimulates the body and spirit...)

Kelly was also a proponent of daylighting and believed natural light to be the primary type of light that defines a space, and that electric lighting should serve a supplementary role.
A STRATEGI FOR CONTROLLING ELECTRICAL LIGHTING
CREATE LIGHT-ZONES CONSTANTS TO ACCENTUATE THE BLUE HOUR

DAYLIGHT

Ambient luminescence (to be dimmed)
Focal Glow / Play of brilliants (as the constant)

ELECTRICAL LIGHTING

DAYLIGHT SCENARIO

NIGHTTIME SCENARIO
STRATEGIES FOR CONTROLLING ELECTRICAL LIGHTING
CREATE A ‘TWILIGHT SCENARIO’ AS A TRANSITION BETWEEN THE DAYLIGHT - AND NIGHT SCENARIO

Daylight scenario:
Utilize daylight (quantity and quality) as much as possible. Optimise the automatic daylight responsive dimming system and motion detection to save as much energy as possible while fulfilling standards and people’s needs.

Night-time scenario:
Use dimmed ambient luminescence to reveal spaces with a special focus on background illumination (typically wall-wash lighting), light along walkways and at exits.

Twilight scenario:
Plan the transition between the daylight - and the night-time scenarios. Dim the Ambient luminescence during the golden hour (6° to 0°) to the light level of the night-time scenario, while keeping the Focal glow and Play of brilliants lighting element as the constant that accentuate the dynamic and polychromatic glow of twilight as it enters the spaces.
1. NO POVERTY
2. NO HUNGER
3. GOOD HEALTH
4. QUALITY EDUCATION
5. GENDER EQUALITY
6. CLEAN WATER AND SANITATION
7. RENEWABLE ENERGY
8. GOOD JOBS AND ECONOMIC GROWTH
9. INNOVATION AND INFRASTRUCTURE
10. REDUCED INEQUALITIES
11. SUSTAINABLE CITIES AND COMMUNITIES
12. RESPONSIBLE CONSUMPTION
13. CLIMATE ACTION
14. LIFE BELOW WATER
15. LIFE ON LAND
16. PEACE AND JUSTICE
17. PARTNERSHIPS FOR THE GOALS

THE GLOBAL GOALS
For Sustainable Development